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# The Citrus Industry

THE ONLY PUBLICATION IN THE WORLD  
DEVOTED EXCLUSIVELY TO CITRUS FRUITS

*Issued Monthly*  
*Representative of every interest—*  
*Representing no special interest.*

VOL. 4, NO. 8

TAMPA, FLA., AUGUST, 1923

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Uniformly



The Best

## Each Grower Can Aid To Solve the Problem

- ❑ The problem created through Florida's increasing citrus production, coupled with the increasing production of other areas outside Florida, puts a definite responsibility upon all concerned in the industry.
- ❑ The marketing organizations have definite tasks created for them in making new markets and stimulating consumption.
- ❑ One thing each grower can do to aid in solving the problem: That is, to select some one marketing agency, with facilities for properly packing, identifying, advertising and distributing the fruit it handles, and then to adhere to his selection.

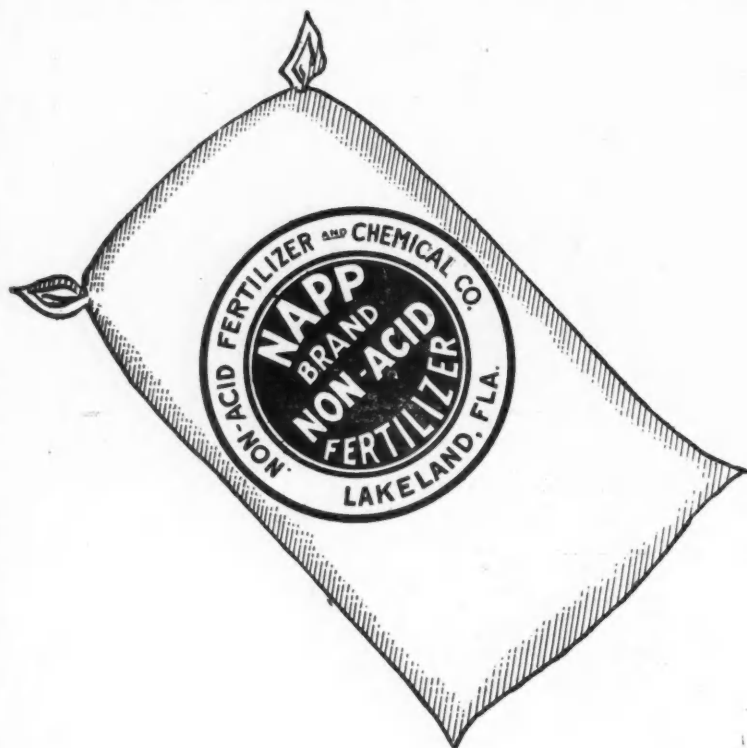
American Fruit Growers Inc.

Orlando

Dependable



Quality



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of a  
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Produces

## "NAPP" BRAND FERTILIZERS

### Have Produced Results

We have hundreds of testimonial letters from  
Citrus Growers and Truckers testifying to the  
favorable results they have obtained by the use  
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**Non-Acid Fertilizer & Chemical Co.**

"Manufacturers of Quality Fertilizers with the Acid Left Out"

Lakeland, Florida

## **Business Is Largely Done on Confidence**

—and we know of no business in which the purchaser is more dependent on the knowledge, business policy and honor of the firm he buys of than "THE CITRUS NURSERY BUSINESS."

Over forty-two years' experience in the growing of "Citrus Nursery Stock" has taught us how to grow the very finest citrus stock it is possible to produce and our policy has enabled us to establish ourselves in the confidence of the citrus growers to an extent that is most gratifying and repays us for the many years' exhaustive research and experimental work we have done in the interests of the citrus industry generally.

We place the experience and knowledge acquired over this long period of years at the command of our customers, always having in mind our purchasers' interests.

Bookings to date have been heavier than we anticipated and we urge growers to place their orders now for the coming planting season.

*"GLEN TREES GROW"*

### **Glen Saint Mary Nurseries Company**

**Winter Haven**

**Florida**

**Glen Saint Mary**

OVER FORTY-TWO YEARS OF SATISFIED CUSTOMERS HAS MADE  
THIS THE LARGEST CITRUS NURSERY IN FLORIDA



## A Citrus Marketing Machine planned to conform with Florida Conditions

In organizing and building up the Florida Citrus Exchange, we, the growers who compose it, have been determined to develop a sales machine capable of handling to advantage all the grapefruit and oranges we produce.

We have recognized fully that our profits depend upon the advantage to which we sell the bulk of our production—we have realized that we cannot make money just by selling a small part of our output at high prices.

Also we have kept in mind the large proportion of goldens and russets as compared with brights and fancy fruit, in the grapefruit and orange crop of Florida—a proportion not likely to be materially changed in the early future.

Consequently, we have builded our sales department to give equal efficiency in handling citrus fruits of all grades. So well have we succeeded that now it is unnecessary to sell any one grade for less than the fruit is worth in order to get fine prices on another grade.

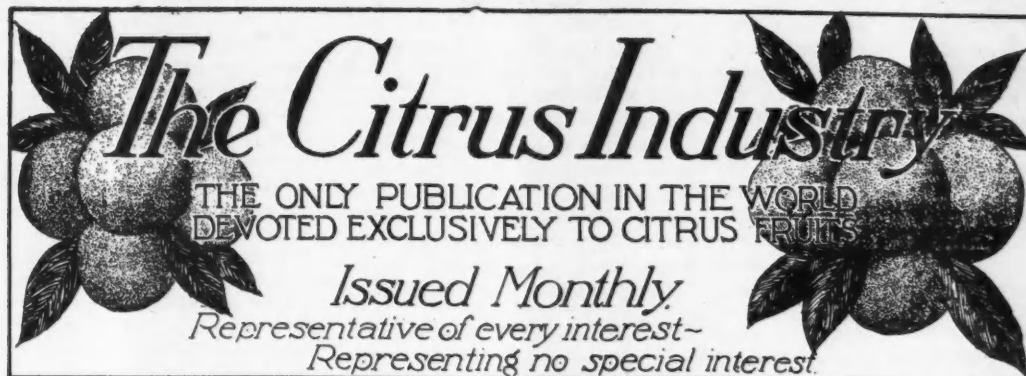
We could and would do much better for ourselves if we did not have to offer our fruit in competition with the lower prices almost constantly offered by non-cooperative and speculative marketing agencies. And you, who sell through them, would make more money.

Your interests and ours are identical. The interests of no privately-owned marketing concern are allied with your interests. When you sell through any of the speculative or non-cooperative agencies you lose money for yourself and for every other Florida grower.

*Why not next season try what  
cooperative marketing can  
do for you on citrus fruits?*

There are no stockholders, no dividends or individual profits, no initiation fees or dues in the Florida Citrus Exchange. You can become a member if you will but co-operate. Consult the manager of the nearest association or sub-Exchange, or write the business manager at Tampa, Florida.

# *The* **FLORIDA** **CITRUS EXCHANGE**



Vol. 4

TAMPA, FLA., AUGUST, 1923

No. 8

# Insects Injurious to Crops of the South

By Dr. Wilmon Newell and Dr. E. W. Berger

(The following paper by Dr. Wilmon Newell and Dr. E. W. Berger, of the State Plant Board, contains much information which will be of general value to the fruit growers of the South.)

While many bulletins and articles have been published upon individual insect pests of the South and others upon the insects affecting certain crops, it is doubtful if our readers have had placed before them a comprehensive view, as it were, of the leading insect pests of the Southern States. An article dealing in general with the more important pests is of value as showing that all crops are susceptible to insect injury and as conveying to the practical agriculturist a knowledge of what he may expect to contend with when contemplating the culture of any particular crop; particularly is this true in those instances where relatively large acreages of any given crop or fruit are contemplated.

The very fact that the Southern States, due to climatic conditions, are able to produce a greater variety of fruits and crops, and frequently several crops per season, than the more northern states, explains why we find here a greater variety of important insect pests than further north. An insect is usually limited in its feeding and breeding habits to plants that are closely related and in many instances is limited to a single host plant. It therefore naturally follows that the

greater the variety of host plants the greater the number of insect species, in the aggregate, affecting them.

One might suppose that the same conditions would result in insect injury being more severe in the southern part of the United States than in the northern part, but this does not appear to be borne out by experience. The San Jose scale in the North has, for example, been fully as destructive as any scale insect found in the Southern States and the Gypsy Moth of New England is not approached in destructiveness by any southern pest with which we are acquainted.

## Peach

The Peach Tree Borer (*Aegeria Sanninoidea*) *exitiosa* (Say) undoubtedly causes more damage than any other insect. The principal peach sections in the South are in Tennessee, the Carolinas, Georgia, Alabama, Mississippi, northwestern Louisiana and eastern Texas. The borer occurs throughout all of them. The moth of this borer emerges during July and August or later, and deposits its eggs on the bark. The eggs soon hatch and the young borers enter the tree, principally near its base, and burrow under the bark, causing much injury, especially to small trees.

The usual remedy consists in digging out the borers with a sharp pocket knife. Different preventive methods have also been employed, such as making a small mound of earth about the trees during the egg-laying season of the moth and placing a tightly-fit-

ting cone of tarred paper or other suitable material about the tree trunk but resting on the mound. The idea is to guide the young borers, as they come down to the base to enter, away from the tree over the cone.

During the past few years, killing the borers in their burrows by fumigating with a new fumigant, Para-dichloro-benzene, has been quite successful. This material, which must be reduced to the granular consistency of table salt or granulated sugar before being applied, is scattered in a circle about two inches wide and an inch from the tree and at about the level of the topmost borers in the tree. The surface of the earth should first be cleared of vegetable growth and rubbish. After the material has been applied, it is covered with at least two inches of earth and the surface compacted with a shovel or otherwise. From one-half to one ounce of the fumigant is applied. It should not be employed about trees less than six years old. This treatment should be applied in Florida during October or November; in colder localities earlier. The material vaporizes best at a temperature of 60 degrees F. or above and this factor must always be considered. The gas formed is five times as heavy as air and consequently settles down. It may also be used for fumigating trunks, boxes, drawers, etc., and is said to be harmless to man.

The San Jose Scale (*Aspidiotus perniciosus* Comst.) is undoubtedly the pest of second importance. If no

control measures were practiced at all in the case of either the Peach Tree Borer or the San Jose Scale, then probably the latter insect would cause the greater damage. However, control measures as applied in commercial orchards are much more effective against this scale than against the borer, which results in the aggregate damage by the borer being the greater.

The San Jose Scale, like all other scales, injures plants by sucking their sap, penetrating the tissues by means of a beak. Being sucking insects, contact insecticides must necessarily be employed and not stomach poisons. For this scale, commercial lime-sulphur solution, in the proportion of 1 part to 9 of water, is applied as a spray when the trees are dormant. Some growers make their own lime-sulphur solution. Soap solution, using a pound of soap to 6 or 8 gallons of water, may be employed when the trees are in foliage.

There are two species of entomogenous fungi that frequently control this scale about as effectively as spraying. These are widely present in Florida and in the Gulf coast country in general. They are the Red-Headed Scale Fungus and the Black Scale Fungus.

Nematode Root Knot (*Heterodera schachtii* Schmidt), although not an insect, comes very close to San Jose Scale in destructiveness, if indeed it does not equal it. This is particularly true in sandy soils throughout the South. This thread-worm, however, has many other woody and non-woody host plants. It injures plants by boring into the roots and some tubers, such as the Irish potato, producing swellings or little knots, by which the name Root Knot was suggested.

Treatment has heretofore consisted mainly in avoiding infested soils. Experienced growers of peaches in Florida always make their new plantings on new land free from Root Knot. Others plant peach trees grafted on plum roots, these latter being immune to the attacks of these minute worms. Mulching the trees heavily is also recommended. For the benefit of those who desire to know more about the control of this pest in general on other plants than peaches, Bulletins 159 and 163, Florida Experiment Station, by J. R. Watson, are recommended.

As a peach pest fourth in importance, we would mention the White Peach Scale (*Aulacaspis pentagona* Targ.). This pest, however, is not generally distributed and injury is usually localized.

For injury produced by this scale and treatment recommended, the

## THE CITRUS INDUSTRY

reader is referred to the corresponding paragraphs under San Jose Scale (4th and 5th paragraphs preceding). The injury produced and the treatment are the same.

### Apple

The apple section is mainly in northern Georgia, the Carolinas, Tennessee, Arkansas, Oklahoma and northern Texas. The Coddling Moth (*Carpocapsa* (*Cydia*) *pomonella* L.) is the pest of greatest importance.

The small larva, or caterpillar, of the Coddling Moth burrows in the fruit and causes what are known as "wormy apples." Treatment consists in spraying with lead arsenate just after the petals have fallen. A second spraying to kill the second brood of "worms" is sometimes given. Experiments in several apple-growing states with arsenical dusts may demonstrate that these have some advantage over spraying.

### Citrus.

Commercially, the citrus industry is not of great importance except in Florida and the Gulf coast portions of Mississippi, Alabama, Louisiana and Texas (referring, of course, to states east of the Rocky Mountains); and even the Gulf coast industry is limited at the present time, leaving for practical purposes only Florida to be considered. There is, however, some citrus of a hardy nature, consisting mainly of Satsuma, grown along the Gulf coast in Mississippi, Alabama, Louisiana and Texas.

Probably the citrus insect causing the greatest damage in the aggregate from year to year is the common Whitefly (*Dialeurodes citri* (Ash)) and second in importance would probably be the Purple Scale (*Lepidosaphes beckii* (Newm.)), although between these two pests there is very little difference in respect to injury produced. The Cloudy-Winged Whitefly (*Dialeurodes citrifolii* (Morg.)) and the Woolly Whitefly (*Aleurothrixus howardi* (Quaint.)) are two other whitefly pests of citrus.

The Florida Red Scale (*Chrysomphalus aenidum* (Linn.)), Long Scale (*Lepidosaphes gloverii* (Pack.)) and Chaff Scale (*Parlatoria pergandii* Comst.) would come next, although it is quite impossible to state which of these is the most destructive as a whole.

That the injury produced by whiteflies and scale insects is due to their extracting the plant juices by means of sucking beaks; in other words, that they are sucking insects, has already been explained. Most whiteflies, furthermore, are the cause of an indirect injury due to the development of a black mold, usually called Sooty Mold

(species of *Meliola*), in the honey-dew that they discharge over the leaves and fruit of the infested plants. Some of the so-called soft scales also produce this blackening so that noting the presence of sooty mold is not a sure sign of whitefly.

Treatment for the Common Whitefly and Cloudy-Winged Whitefly of citrus consists in the use of the fungus parasites of these during the period of summer rains, followed in early fall, if necessary, with a good oil-containing spray applied as a final clean-up for the season. Spraying with an oil spray should not begin earlier than about ten days after the disappearance, or near disappearance, of the fall brood of adult whiteflies; i. e. until the eggs have hatched, when the young larvae are easily killed by spraying. This period generally falls in October and spraying should probably never be delayed beyond November.

It is believed that whenever the fungi are diligently employed in a grove during the period of summer rains, a second spraying with an oil spray will, as a rule, not be necessary.

The Woolly Whitefly is generally kept under control by its natural parasite, a minute wasp-like insect (*Eretmocerus haldemani* Howard). The spraying in fall previously indicated as a final clean-up for the season will also apply to this whitefly.

The same spraying in fall, indicated for the whiteflies as a final clean-up for the season, will also assist in the control of scale insects present, and special sprayings on account of scale insects will probably only occasionally become necessary. The fungus parasites of scale insects should also be diligently spread, or introduced if not present, during the period of summer rains.

Finally, should it become desirable or necessary to spray with Bordeaux or lime-sulphur solution in order to control scab, melanose, etc., or with lime-sulphur to control mites, such sprayings should be done when needed, and the fungi reintroduced if badly injured by the Bordeaux. Should such insects as whiteflies or scales be present when the use of Bordeaux is otherwise indicated, Bordeaux-Oil Emulsion should be used instead of plain Bordeaux, as it will at the same time destroy large numbers of the insects.

Bordeaux-Oil Emulsion, however will be just as injurious to the fungus parasites as plain Bordeaux so that subsequent sprayings to control scale insects and possibly also whiteflies will become necessary, and it may become

# Grove Problems

## Spraying for Whitefly

Question: I notice a very heavy flight of whiteflies in my grove. I sprayed thoroughly in May and apparently all flies disappeared, but during the past two weeks they have reappeared in great numbers. Should I spray now or wait until later in the season?

D. J. B.

Answer: Examination with a good microscope would have shown whether the May spraying was effective but judging from the number of whitefly adults reported it was not. The best results from spraying for control of any of the varieties of whitefly are obtained by spraying thoroughly soon after the eggs have hatched so as to make the application when they are easiest killed which is during the crawler and first larvae stage.

If your grove is bearing a good crop of fruit would suggest that you help spread the fungi which is most effective on the variety found in the grove; making arrangements for a thorough spraying near the first part of September, depending somewhat on the location and climatic conditions, but which should be given about two weeks after the whitefly adults have largely disappeared.

## Mealy Bugs.

Question: Are mealy bugs a serious menace to young trees? I find many of these bugs on my young trees, but do not know just how serious they may be. What steps should I take to control them?

W. R. C.

Answer: As a rule the natural enemies control the mealy bug to an extent satisfactory, in a commercial way, unless protected by large colonies of ants. Generally when ants are exterminated or prevented from going onto the trees, by banding, the predatory insects come to the rescue and control them very efficiently. In case of a severe mealy bug infestation fruit which is immature may be deformed and become weakened so it will drop and in some instances partial defoliation of the trees. Discoloration and weakening of the rind of older fruit causing a high per cent of culls and heavy decay in shipping.

Spraying with a good insecticide using 250 pounds pressure and being very thorough in the application is the quickest way of reducing the infestation. Spraying with clear water will often control them by washing them from the trees, the heavy summer rains usually check them somewhat, following which the natural en-

(This Department is in charge of Mr.

L. D. Niles, of Lucerne Park, Fla., who will gladly answer all legitimate grove problems submitted by readers of The Citrus Industry.)

emies, predatory insects, usually keep them under commercial control. In many instances under observation spraying is given credit for results which have without doubt been the work of the above mentioned predatory insects including lady beetles and their larvae, larvae of the lace-winged flies, syrphus-fly and others.

## Fertilization.

Question: Which do you consider the better method of fertilization for young trees, frequent applications of a small amount, or less frequent applications of a larger amount? I have a grove of two-year-old trees which have received the regular three applications each season since planting. But they do not appear to respond as they should. Would you recommend more frequent applications where the trees show no signs of disease or serious scale injury?

E. M. J.

Answer: In order to get best results from fertilization of young citrus trees one should keep well in mind the preceding climatic conditions and be governed accordingly. The future climatic conditions being outside of the grower's control and being in doubt as to whether he will receive torrential rains or a drought, it frequently behooves him to play safe and use more frequent applications of small amounts, preceding flush of growth. Generally it will produce most amazing results in the season's tree growth; more than enough to pay for the extra expense and trouble.

However, be sure your fertilizer formula is suited to your soil conditions, which condition you should constantly try to build up and improve, both to increase the growth of the trees and incidentally affect the quality of the future crop of fruit.

## Bothered With Ants.

Question: My young grove is overrun with ants, small red ones. These ants infest the trees by thousands and in many cases are eating off the tender new shoots. I have tried about all the ordinary methods of ridding the grove of this pest, but without success. What would you recommend?

G. D. M.

Answer: As you make the statement of having tried about all the ordinary methods of ridding the grove without success, would suggest two methods of handling this problem in the hopes of your securing satisfactory results. Either find and destroy the nests and laying queens, or else prevent the worker ants from going onto the trees.

First, to destroy the colony, bear in mind that ants are somewhat similar to honey bees in having laying queens which do not leave the nest and all workers being barren females, so there are two successful ways of destroying the colony, either with a fumigant placed in the nest or a poisoned bait placed where the workers can find and carry it to the nest for food; which will kill the colony.

Perhaps the best fumigant is carbon bisulphid, although a strong (ten per cent) solution of sodium or potassium cyanide is very successful. Care must be used in handling either of these materials as they are deadly poisons; the method of treating the nest being the same with each fumigant. After the nest is located, make two or more holes into it with a stick or iron bar, using from two to four ounces of the solution according to the size of the colony; immediately cover the holes with moist dirt and tramp solid; covering the nest with a wet blanket or sacking will help retain the fumes which will penetrate thru the nest killing all ants. Fumigation should be done either early in the morning or late afternoon when most of the workers will be in the nest.

Do not apply this treatment close to a young tree as the gas will kill tree as well as ants. If unable to locate the nest a poisoned syrup can be made using sodium arsenite (CP) three-fourths ounce, dissolved in one pint of hot water; make a syrup of granulated sugar, fifteen pounds, water seven pints; boil thirty minutes. Cool, add poison solution. Cool, add to this poisoned syrup one pound of honey, mix thoroughly. Place small quantity where ants only can reach it. They will carry it to their nest and the colony will eventually die out. A paraffined paper bag with holes for the ants to pass through can be tied or nailed to the tree.

The other method, that of keeping the ants from getting on the trees can be done by banding the trunk with some material they are either unable

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# The Tree, The Unit of The Citrus Industry

By H. J. Damerel, at Southern California Citrus Institute

In painstakingly caring for each individual tree, the grower often wonders whether his efforts will be repaid. Will his future income justify the vigilance, the effort and the expense that is incumbent to his work? Will his tree get too old to produce profitable crops—or, in other words, will they produce profitable crops for a sufficient number of years to warrant individual tree care? These being the questions most often asked, it seems only fitting that I try to convince you that we can expect a long continued production from our groves.

There is an apple tree in Patrick county Virginia, 120 years old, which has a record, for one season, of 123 bushels. The trunk of this tree is twelve feet in circumference. We have reliable information that in foreign countries citrus trees have been bearing crops of large size and good quality for several hundred years. The parent Navel tree in South America is about ninety years old. According to Mr. Shamel this tree is still bearing satisfactory crops.

Knowing that his healthy trees have a long bearing period, knowing that there is an ever-increasing demand for his product, the citrus grower has reason to work for higher production; and higher production, or rather, let me say, the highest production, cannot be attained without individual tree care.

With the constantly increasing population and use of fruits, the time is not far distant when all citrus products will have a much wider distribution. The net increase in the population of the United States is fifteen million every ten years; and the net increase of improved farm lands, for the same period, is 7 per cent less than the increase in population. Under these conditions increased prices for citrus products can be expected.

Now the last decade has shown a movement toward the cities; this movement has brought the number of city dwellers to 52 per cent of the total population of the United States. How far this tendency of the people to concentrate will go must remain a matter for conjecture, but it is not unreasonable to assume that the trend will continue until at least two-thirds and possibly three-fourths of our population dwell in cities. Here, then, is

one more reason why the farmer's future net returns will be great. Food comes from the soil; and we must all eat.

There is no recipe which can be given by growers or by scientific investigators as a "cure-all" for orchard ailments. Each grower must work out his own problems. It is a long, hard, tiresome, and sometimes discouraging course, but there is no other way. The basic fundamentals can be obtained by reading or by listening to experiences of others, but when it comes to getting the utmost out of his orchard each individual must determine for himself which is the wiser course to follow. Problems that confront the growers differ even though the orchards may be in the same district.

But always it must be remembered that a neglected orchard does not justify its existence. If an orchard is worth keeping it is worth keeping well, otherwise a large number of trees merely encumber the ground interfering with its use for other purposes. It is not the number of acres, but the care of those acres.

In the case of individual trees, most of us only travel the first mile. It is the second mile which determines whether or not the larger number of trees in our groves are to be made profitable. The profits and, also, the economy are in this second mile. Proper economy in a citrus orchard means the constant expenditure of more time—more of your personal time. All successful business today is spending more money and the time of the owner, who is the only one possessing a full interest in the property, represents the same thing.

This personal attention I place in the category of first importance. You can use splendid judgment in the selection of workmen to do the work for you, but you must learn the business as far as practicable in all its basic principles, or your groves will not get the percentage of real care that is the difference between real success and just ordinary success, or of conditions approaching failure. The grove that is farmed by absent treatment, or long-distance supervision, is almost invariably a grove that suffers. Absent owners should use great care in selecting competent managers on

part or whole time, and such growers should be willing to pay more than ordinary day wages in order to get this kind of supervision. I can say that we have a remarkably fine class of orchard workmen in this industry, men who are conscientious and painstaking as a rule. But nothing can take the place of personal supervision. This is not peculiar to the citrus industry. It is merely one of the fundamentals of all business.

This leads immediately to individual tree attention. It has been my experience that the rancher who works painstakingly with poor trees will get splendid results. Plant pathology is a deep subject. We cannot begin to understand the mysteries of nature, but we can observe the varying responses that come from treatments, and there are ways to bring back a gophered tree without cutting it out; there are ways to handle gum disease that are far from hopeless, and there is most emphatically a way to stimulate an undernourished tree if one gives it personal study in the grove. Trees are units in a grove. A non-producing unit is a liability that drains profits from the highly-producing units. A poor tree is overhead expense, when it should be an asset, contributing to the profits.

## Groves are Individual.

Every grower has distinct and individual problems of soil conditions, climate, and character of plants in the orchard. He has to contend with and overcome the mistakes of those who have owned and operated the grove before he acquired it, or with the mistakes he made if he set it out himself. Not many groves possess a true and written history. This is unfortunate, but it can be overcome by a close personal study of the grove and its tree-units, their performance and unit characteristics.

Since orchards are in a continual state of growth and change until they reach that point of actual deterioration so much talked about, and since that point of deterioration depends almost wholly on the care the grove has received and is receiving, it is of paramount importance that each grower give each tree the maximum of care. If this is consistently done, the time when the grove begins to decline

is much further off than most growers are inclined to believe.

The exploitation of soil fertility by the removal of crop after crop, the burning out of the organic matter and the leaching out of the nutritive properties of the soil deserves serious consideration, and often poor production of parts of the grove is due to a soil condition rather than to poor or old trees.

It is not good farming to permit any of our trees to deteriorate to the point of becoming unprofitable without our putting up a determined and studious fight. This impels me to mention a practice which, in a great many cases, will do more to rejuvenate the non-productive trees—this practice is the resurfacing or the placing of new soil in the orchard. It is often found that the areas of low production are where the surface soil has been scraped off at the time the orchard was planted, or has been washed away by flood waters or by careless irrigation.

After a careful survey of several orchards treated by re-surfacing, I feel sure that this work is doing all that was expected of it, apparently without regard to whether the new soil was a rich sediment, sand, or subsoil from the grading of a hill, the only requirement seems to be that the soil be workable. It appears that the benefit is in covering the former topsoil with a mulch. It seems advisable to plow in order to bring the new material in contact with the original soil and to encourage the better distribution and penetration of water. Re-surfacing work may be done during slack times and reduce its cost to the minimum.

To those growers who are considering the improvement of soil conditions, especially in old orchards, I recommend a study, at first hand, of conditions in the Highlands orchards where re-surfacing has been done, and is now being done.

In re-surfacing, use the best soil obtainable even though any soil may be good. At first thought the expense of this work may seem prohibitive. In many cases this is probably true, but as the benefit of this work is apparent after 10 or 12 years, and as low producing areas are more valuable after being so treated, I am sure that in most instances the first cost is of minor importance.

Citrus trees planted in the fertile soil, usually, bear bountifully while young and vigorous; producing heavy crops even though given little cultural attention. But we find that, as they grow older, passing say 30 years of age, we must give them greater care if we are to expect from them a profitable quantity of good fruit.

Nature in many ways helps the young orchard. Perhaps most important is a wealth of sunshine, which is so essential to the proper functioning of the leaves and, also, to aid in the process of nitrification that takes place in the soil. In the older orchards we have the large trees growing close together, preventing the sunshine from having effective influence either on the leaves or on the soil. Thus a large portion of the ground allotted to a tree becomes hard and dry and furnishes it no nourishment.

Here is where some individual attention should be combined with hard work, and it is necessary to dig up the soil so that the root system may have an opportunity for development. Breaking up this soil, fertilizing and irrigating it will develop in it a considerable feeder root system, and will do as much as any one thing to bring back an old tree to its normal production of good fruit.

A successful grower is the one who gets the right mental attitude toward the poor spots in his grove. His slogan is "Save the tree and protect the income." He realizes that an auspicious future depends on intensive fruit growing. He never loses sight of an all-important duty, that of the proper conservation and maintenance of the soil itself.

Also, the successful grower keeps a record of his trees. This is a difficult thing for the average grower to do. I suggest a plan which is in use by a number of successful growers. It is not necessary to number the trees, although much better to do so. The grove should be platted, showing each tree on a chart, with a particular sign to show whether the tree's crop was heavy, good, light or no crop, or one can figure on a percentage basis, and with notations as to the physical condition of the tree, as to whether it is diseased and in what way, whether it shows a sign of poor ability to feed, or signs of injury from any source or for any reason. It may sound like a great deal of detail, but in fact is no. Most ranchers who own from 10 to 20 acres will in a few years become so familiar with such a system that they can almost recall the condition and performance of any tree without consulting the chart. Each rancher should work out his own way of keeping such a chart, the only necessity being that it shall be intelligible to him. Six small marks or signs may indicate the principal tree and crop conditions. A grower should go over his orchard twice or three times a year in order to study the varying conditions of the crop from setting to harvest. The time to estimate the crop is just before the

first picking is made.

Concerning individual tree care, there are many ways of carrying on this work. I might suggest a plan which may suit the real "dirt" farmer; a method we are using at the present time. We take a low orchard wagon upon which we load all necessary tools and fertilizer. Three men do the work; one man decides what is to be done in each case, and the other two carry out his instructions. In the case of an "inter-set," for example, a small amount of fertilizer may be suggested, or perhaps the tree should be carefully mulched. If a tree has been barked, the wound is carefully sealed and wrapped with burlap which stretches with age and does not in any way bind the tree. To a small tree a coat of whitewash is applied. If the roots of a tree have been damaged by plowing or cultivating, those roots are cut off and sealed over. Trees that have been budded or that have been cut back are looked over—it may possibly be necessary to remove them. Trees having exposed trunks are whitewashed. Trees that are below standard are given an extra ration of fertilizer. Perhaps they need a little pruning, or the ground may need spading, or it may be that the crown roots need sunlight. We are constantly watching for evidence of gophers or squirrels. We endeavor to do this individual tree work about ten days after an irrigation. It is work that must be done.

Any experienced grower knows of some good method of carrying on this work. He knows what should be done, but the main thing is to do it. Indeed there are many things that aid in bringing up the young tree quickly; there are many things that aid in keeping an old tree in a state of remunerative production. The amount of water given, the way in which the water is applied, the building up of soil fertility, the improvement of the sanitary or, it may be the unsanitary, condition under the tree, the treatment of tree diseases—these are only a few of the necessary duties of the successful grower of citrus fruits.

The cost of simply keeping a tree in the ground amounts to at least three dollars a year. It is not difficult to convince one, then, that the leaks must be stopped by improving each tree, and by watching soil conditions.

Many close students are now convinced that our problem is largely one of old soil rather than of old trees. This is one of the reasons why, as I have already mentioned, we are hauling hundreds of loads of dirt and applying it to the poor spots, sometimes

# The Citrus Industry

ISSUED MONTHLY

By

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TAMPA, FLORIDA

S. L. FRISBIE, Editor and Manager

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## GROVE CALENDAR FOR AUGUST

### Timely Suggestions for Grove Work During the Present Month

Prune out dead wood and water sprouts. Avoid heavy pruning at all times. Cover all large cuts with a coat of warm grafting wax.

Get sprayer in good order for next month's work.

Spread the brown fungus of white fly.

Make plans for fall and winter grove plantings.

Do not place orders for citrus trees with firms in other states; this is dangerous and unlawful, and such trees will not be admitted into the state.

## LOWER, NOT HIGHER, RATES NEEDED

The proposal of the railroad companies to increase the rates on refrigerator cars for fruit and vegetable shipments from Florida, and to enforce a ruling for a three strap box for citrus fruits, met with prompt and emphatic protest from fruit and vegetable growers and shippers of the state, which was voiced at the meeting held in Orlando on August 3.

At the same time that the proposed increase on fruit and vegetable shipments out of the state was announced, announcement also was made of a proposed increase in the rate on farm and grove tractors brought into the state, the evident purpose of the carriers being to catch the unfortunate grower both "comin' and goin'." A protest meeting against the latter proposal was held in Atlanta, July 31.

Fruit and vegetable growers of Florida have been discriminated against so long in the matter of rates that the carriers have evidently come to consider them legitimate prey for further encroachments. There is evidence, however, that the growers are now pooling their strength in a

determined effort not only to defeat the purpose of the carriers to increase rates and add burdensome rules, but to go still further and put up an organized fight for lower rates than those now existing—rates which will remove in part the handicap under which Florida growers have operated in competition with the growers of other sections.

The meeting of shippers and growers at Orlando was notable by reason of the high percentage of shippers present, and also for the unanimity shown in every step proposed for opposing the action of the carriers.

While it is too early to predict with certainty the outcome of the dispute between the carriers and the shippers, there is a general feeling of optimism among the latter, who believe that the justice of their cause must appeal to the ultimate rate-making body—the Inter-State Commerce Commission, and result in an order nullifying the proposed increase.

Whatever the outcome of present controversy, there can be no doubt that the attitude of the railroads in forcing the issue at this time has resulted in a solidification of the various shipping interests of the state and given rise to a spirit of determination which is certain to be felt in any future discussion of rates on perishable products of the state. In over-reaching the mark in the present controversy, the carriers have unified the diverse shipping interests as they have never been united before. The result of this unity of action is bound to be beneficial to the growers and shippers in any future consideration of a readjustment of rates.

## BEST FRUIT BRINGS BEST PRICES

Emphasizing the relation of better fruit to better prices, Mr. George T. Tippin of Vero, Florida, submits an article in this number of The Citrus Industry in which the figures "speak for themselves."

The Citrus Industry is very glad to know that of a half million boxes of fruit shipped from a given locality in Florida, 69 per cent graded first quality. When 69 per cent of the entire Florida citrus crop reaches this degree of perfection, the fruit grower may contemplate any possible increase in production with equanimity. There will always be a market for fruit of good quality, and as the proportion of good quality fruit increases, the market for fruit of poor quality will become more and more restricted. It is the grower of poor quality fruit who must pocket the losses in the future.

South Florida growers have nothing to fear from the development of the Satsuma industry in West Florida. The Satsuma will be well out of the way before the tangerines and other South Florida fruit is ready for the market. The Satsuma, too, will be a sort of advance agent to popularize other "kid glove" oranges.

Many new packing houses are being erected throughout the citrus producing sections of Florida. We shall need them to care for the crop now on the trees if present indications are fulfilled.

## FIGHTING GROVE PESTS FROM THE AIR

New methods for fighting insects and diseases are coming to the front so rapidly that it is hard for the average man to keep strictly up-to-date, says the American Fruit Grower Magazine. Fighting insects by aeroplane is one of the latest methods. Last summer readers were interested to know that aeroplanes were used in Ohio in dusting forests. We have recently had a chance to check up on this work and the results obtained are indeed very interesting. The forest known as the Severance forest, near Cleveland, was used for the experiment. This forest consisted of trees up to 80 feet in height and from that down to dense undergrowth. The results were very satisfactory. About 99 per cent of the large caterpillars feeding on the catalpas were destroyed within a relatively short time.

The experiments showed that it was necessary to have a slow flying aeroplane and one which would carry quite a large amount of material. The aeroplane was kept from 20 to 30 feet from the ground. It is interesting to note that the aviators who handled the machine were the famous Lieutenants McCreedy and Kelly, who recently crossed the continent.

It may be possible in years to come that the aeroplane can be used in fighting certain insects in our heavily planted districts, such as the Fort Valley district of Georgia, the Wenatchee district of Washington, and any district where there is a large area closely planted. The aeroplane may come in to supplement our general spraying and dusting programs and be of great aid to us. It seems to have wonderful possibilities in the fighting of forest insects.

The government, however, is not satisfied to just stop with the aeroplane. A new motor balloon craft, designed for the army and capable of hovering over a specified area, has recently been turned over to the Department of Agriculture and will be used to fight the gypsy moth, which is destroying forests of northern New England and eastern New York. The craft when on the ground is held to a folding mooring mast which is anchored to a motor truck. The truck will carry the material needed for the balloon and also the gas compressor plants to supply the hydrogen. This is the first balloon of this kind constructed in the United States and we will follow the results obtained with great interest.

Many of our readers have wondered undoubtedly whether or not the poisonous gasses which were used in the war could be used in fighting insects. Entomologists that we have talked with are rather skeptical, believing that insects will withstand more gases than birds, animals and human beings. However, it is interesting to note that the Chemical Warfare Service of the Army is about to try some experiments in fighting cranberry pests. The well-known cyanogen chloride, a powerful poisonous gas, will be used. It is said, however, that this can be used with a high margin of safety. We recently read that poisonous gases were also being used effectively in the southwest in killing rattlesnakes in their dens.

Perhaps we are on the threshold of new discoveries which will mean much to our American horticulture.

The State Plant Board is at once the inspiration and the salvation of horticulture in Florida. The Board is deserving of every encouragement possible at the hands of the Florida State Horticultural Society, individual horticulturists, and the highest degree of support at the hands of the Florida legislature. No niggardly policy of economy should be permitted to tie the hands of this most important adjunct of horticultural development in the state.

The Isle of Pines is counting on a smaller crop, better quality, better shipping facilities and lower rates, and a wider distribution for its grapefruit crop this season. If all of these anticipations are realized, the Pines growers should realize more money from their crop than heretofore.

In the past grove owners have given their attention all too much to quantity production. The wise growers are now giving their best thought to quality production. In proportion as they succeed in the solution of the better fruit problem will their bank accounts increase.

A gentleman writing from Peru to subscribe for The Citrus Industry, says: "I am coming to Florida to start a citrus grove just as soon as I can close up my business affairs here, and I want to get in touch with the situation there while I am getting ready for the move."

Reports from Gainesville indicate that Farmers' and Fruit Growers' Week is a fitting successor to the Citrus Seminar and Live Stock Round-Up—at least in the character of the papers read and addresses given. The citrus section was especially interesting.

It is encouraging to note that the men who are best posted on the citrus industry in Florida are the ones who are making the heaviest investments in new groves. Experience has demonstrated to them the soundness of such investments.

Barring some unforeseen calamity, the coming citrus crop will be the largest Florida has ever produced, surpassing last year's record by some millions of boxes. Let us hope that the quality may be in keeping with the quantity.

Satsuma plantings in West Florida this coming winter will be limited only by the quantity of suitable nursery stock available, according to reports received from the citrus enthusiasts of that section.

Florida nurserymen are preparing for another heavy planting season, but present indications are that even the heavy stocks now being grown may prove inadequate to meet the demand.

Not content with increasing the rates on what the grower has to sell, the carriers also insist upon increasing the rate on what the grower must buy to produce what he sells.

Get the rust mite as soon as he appears. Sulphur—dust or spray—will do it.

# Sulphur Quality Easily Told by Simple Tests

By F. W. Wieder, Chemist, Stauffer Chemical Company of Texas

"We have heard the argument advanced that certain sulphurs would stay on the vines or trees all season and would not even be washed off by the rains. We have seen many sulphurs that would never evaporate and pass off into the very essential sulphur 'fume'. But remember, it is this gas which does the work."

Among the many insecticides and fungicides used in this state, sulphur stands head and shoulders above all other spray materials in importance. Not only does sulphur lead from the standpoint of the importance of the uses to which it is put, but it is safe to say that no other single spray material is used in such large quantities and under so many diversified conditions.

Many of our common spray materials largely owe their efficiency to the amount of sulphur which they contain, for example, Lime Sulphur Solution; Dry Lime Sulphur; Soda Sulphur and Barium-Sulphur Compounds. Then there are many of the newer dusting materials that depend upon sulphur for some of their efficiency, either directly or indirectly. In this class might be mentioned Nicotine Sulphur Dusts; Nicotine-Sulphur-Lead Arsenate Dusts; Tobacco and Sulphur Dusts, etc.

The greatest use of sulphur, however, is found in the control of Mildew and Red Spiders. For this purpose the pure sulphur in elemental form, but possessing certain special properties is required. And it is at this point that the writer wishes to emphasize the question of dependability.

## Kind of Sulphur

Too many people are inclined to think that "sulphur is just sulphur." For dusting purposes the best sulphur cannot be too good. The relative values of the different kinds of sulphur have been argued back and forth for over 40 years. Hardly a year goes by without several new dusting sulphurs being offered on the market, but it is a significant fact that through this test of time Pure Sublimed Flowers of Sulphur still continues to do its work quickly, efficiently and economically.

It is important to note just one particular peculiarity in the different kinds of sulphurs. The particles of a Sublimed Flowers of Sulphur of 100%

purity are of a flake-like structure, which prevents their sticking to each other and hardening in the sacks. On the other hand, a ground or crystalline sulphur quickly forms into pellets or lumps in the sacks just as powdered sugar does. To overcome this condition, various amounts of other materials are often added to ground sulphur in order to make them free running. Adulteration is always a bad thing, and especially so in an insecticide or fungicide. To adulterate a sulphur that is to be used for dusting purposes is to defeat the very purpose of its use. If enough filler is added to a ground sulphur to make it free running by coating the sulphur particles, that coating is very apt to be sufficient to prevent the very essential fuming action.

## Fuming Qualities

We have also heard the argument advanced that certain sulphurs would stay on the vines or trees all season and would not even be washed off by the rains. This no doubt is true, because we have seen many sulphurs that would never evaporate and pass off into the very essential sulphur "fume." Remember it is this gas that does the work. A fine dust cloud produced by the aid of some inert filler will not control the mildew. Hydrated lime, corn starch, or even road dust will make a fine cloud whereas pure sublimed flowers of sulphur breaks up into such a finely divided yellow dust as to be hardly noticeable.

## Free Running Sulphur

There are many adulterating materials that can be added to sulphur to make it free running. If the sulphur particles are sufficiently coated, they will flow through the dusting machine like water. Under no circumstances should sublimed Flowers of Sulphur be adulterated, for once the sulphur particles are coated, the fuming action is greatly reduced. The snow-flake texture of Sublimed Flowers of Sulphur prevents its caking and hardening in the sacks and no filler is needed.

A free running sulphur often spouts out of the machines in large quantities and causes a severe burning action to both fruit and leaves. Besides there is often a great waste of sulphur where a free running sulphur is used, and we have heard several instances

where double the quantity was required to cover a certain acreage.

The process by which sulphur is sublimed is highly interesting. The sulphur ore is melted in furnaces and goes in the form of gas through pipes to cold bin rooms, where it crystallizes and falls like snow upon the floor. Can you imagine a cloud of gas turning into a sack of sulphur?

The value of a dusting sulphur is not determined on one quality alone. Fineness without purity and the fuming qualities or purity without fineness and fuming qualities would not, by any means, indicate good dusting sulphurs. On the other hand, if a sulphur fulfills all the requirements of purity, fineness and fuming qualities to the highest degree you may be sure it is a good dusting sulphur.

## Sulphur Tests

Any grower can easily determine the quality of a sulphur by using the following easy test:

Below are seven practical tests by which sublimed sulphur may be known. Other dusts may have insecticidal values; pure sublimed flowers of sulphur ALWAYS has.

1. Burn 2 or 3 pounds in a clean dish and note the amount of residue which remains. This will give an indication as to the purity of the sulphur.

2. What color is pure sulphur?

The best quality of Sublimed Flowers of Sulphur is a deep golden yellow color. This color in a sulphur is the visible evidence of complete refinement and that it is absolutely pure. Pure sulphur has just one color and that is the golden yellow with which everyone is familiar. Crude ground and adulterated sulphurs are grey, and sometimes white, in color, entirely unlike pure sublimed sulphur.

3. Squeeze or compress some of the sulphur in the hand. There is a give or springiness to Sublimed Flowers of Sulphur due to the bulky and light structure of the particles that cannot be duplicated in any other kind of sulphur. A ground sulphur is heavy, dense and compact.

4. Notice the taste and odor of the sulphur. A sample of pure sublimed Flowers of Sulphur has the same odor that is present in the vineyards during dusting time and to which the princi-

## Florida East Coast Railway Co.

Flagler System

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# Good Citrus Orchard Practice in California

By Robert W. Hodgson, Farm Adviser Los Angeles County

Students of farm management methods and good farmers universally agree that the cultural practices and farm management methods of the best farmers in any community where the agriculture has become standardized constitute the best guides for the newcomer. Careful studies have shown that after a period of years of trial and error, methods and practices become standardized and generally are the most efficient and successful for the community concerned. It is the recognition of this fact which makes every good farmer inherently suspicious of the newcomer who tells of the remarkable results which he proposes to secure through the introduction of new and superior methods. In ninety-five cases out of a hundred if the newcomer lasts for any considerable period, he ultimately comes to the average practice of the best farmers in the community.

A knowledge of what is the average practice of successful growers is therefore of very great importance to the success of the newcomer. Citrus orchard properties in most sections of California have changed hands quite frequently and the result is that in almost every district a large percentage of the growers do not have any comprehensive idea of the practices which years of experience have demonstrated to be conducive to success. Recognizing the importance of securing this information and preparing it in form so as to be available to the thousands of citrus growers who might profit from it, last fall the Agricultural Extension Service in Los Angeles county, in co-operation with the Citrus Growers Department of the Los Angeles County Farm Bureau took up the matter of the need for a citrus orchard survey with the State College of Agriculture.

It is gratifying to report that a survey of this character has recently been completed by Professor R. S. Vaile of the Division of Orchard Management of the Citrus Experiment Station at Riverside. This survey covered more than six hundred citrus orchards, the majority of which have been under the same management for a period of five years or more. Care was taken in selecting the orchards from which data were secured to select those which, in the opinion of the local

growers' committees, were above the average with respect to care and management. The results of this survey, it is felt, clearly brings out the average methods and practices of the successful citrus growers in southern California and furnish precisely the information which the newcomer is likely to find most helpful.

For purposes of comparison, the southern California citrus industry was divided into three districts: the coastal section, the intermediate section and the interior section. A general summary of the average yields per acre, amounts of manure and nitrogen used and amounts of irrigation water applied for the three districts is shown in Table 1.

ter" are questions frequently asked. The data secured by Professor Vaile in this survey are extremely valuable in answering these questions which in the past it must be admitted have not been answered to the general satisfaction of many growers.

A study of the age of orchards as related to their production shows that, where good care has been given, production increases up to an age of thirty-five years. The period of maximum increase, however, occurs between the ages of ten and fifteen years, after which production increases rather slowly. The figures secured by Prof. Vaile show that a ten-year-old orchard produces approximately 60% of the maximum yields; at fif-

TABLE 1.  
Orchard Practices and Yields.

District	Production per acre		Fertilizer Used		Water Applied	
	Oranges	Lemons	Nitrogen	Manure	Per season	Interval
Interior	15,400	18,900	122	6.3	28.6	30
Coastal	19,500	24,700	123	9.6	20.2	33
Intermediate	18,500	24,000	160	7.8	24.9	25
	Pounds	Pounds	Pounds	Tons	Acre in.	Days

The information given in this table will be of great value to citrus growers for purposes of comparison with the practices in use on individual groves. If a grower's general practice falls below the figures given in the table, it is quite probable that he is failing to secure maximum results due to deficiency in the particular factor under consideration. If the grower is exceeding the figures given in this table, unless he is securing markedly higher yields, it is not improbable that a reduction in the particular factor concerned might result in a saving, still maintaining production at a satisfactory figure.

The relationship between yields and the average amounts of irrigation water and fertilizer applied, as well as other factors in successful citrus fruit production, is a matter of the greatest interest to the citrus grower. "Am I applying the average amount of fertilizer and of irrigation water to secure the highest yields?" is a question which should naturally interest every California producer of citrus fruits, both newcomer as well as long-experienced grower.

"What is the optimum type of soil, the correct amount of fertilizer, and an adequate amount of irrigation wa-

teen years of age it is producing 80%; at twenty, 92%; at twenty-five, 94%; at thirty, 97%; and at thirty-five, 100%.

With respect to soil type, the survey indicates that maximum yields are secured on the sandy loams and fine sandy loams, with slightly lower yields for the gravelly sand loams and the loams. The lowest production of all was found on the sands, with clay loams showing a production intermediate between sand and loams. It would appear, therefore, that the ideal California citrus soil is either a sandy loam or fine sandy loam.

The correct amount of fertilizer to apply for maximum results has for years been a perplexing question. The survey has given extremely valuable data in answer to this question. It shows that maximum returns for the investment are secured from an application of from 250 to 300 pounds of available nitrogen per acre. The highest yields recorded were from orchards where 350 pounds of nitrogen per acre had been applied. Above that figure, the yields actually decreased and the trees were noted to be increasingly affected with the mottled leaf disease. Valuable data rel-

Continued on Page 15

## Fruit Properly Packed Reaches Destination Intact

The first requisite in proper packing is a properly built crate—and we make them.

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### No. 2

## A BRIEF OUTLINE OF INSECT PESTS AND FUNGOUS GROWTHS

### OIDIUM, or "POWDERY MILDEW"

POWDERY MILDEW of the grape, garden truck and peach, is no doubt one of the most widely spread and persistent fungus diseases to be found in the country. Like most harmful parasites, Powdery Mildew is so minute that only with the aid of a microscope can it be seen as a living fungi, and then it appears as a tiny, separate plant, with suckerlike tentacles, living at the expense of the vine.

Fortunately is quickly noticeable and can be controlled before great damage is done. It forms a fine, gray, powdery, or mealy, coating to the upper surface of the leaf, which if allowed to spread, quickly covers the young leaves, canes and fruits, checking growth, deforming the leaves and finally affecting the fruit to such an extent that it darkens, hardens and either cracks open or drops to the ground in mute testimony of neglect.



FLOWERS OF SULPHUR has long been recognized as the ONE superior control for this disease. Dust with FLOWERS OF SULPHUR when the shoots are about 6 inches long, and again just before the blossoms open. If the weather is unusually cool and moist, it is well to dust a third time when the fruit is about 1-8 inch in diameter. If your plants were affected with Mildew last year, do not wait for the disease to reappear but dust with "ANCHOR" BRAND SUBLIMED VELVET FLOWERS OF SULPHUR, 100% pure. It is the best grade Flowers of Sulphur ever produced and is the grade that GIVES RESULTS.

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WE URGE GROWERS to let us have their orders as early as possible, that they may be assured of their complete requirements for their Fall and Winter plantings. The indications are from our bookings to date that we will not be able to supply the increasing demands for our Citrus Stock again this year.

## Warlmann Nursery Company

Ocala, Florida

Write for price list and information on the famous "WANURCO" Tangerine.

# Better Fruit for Better Prices

By Geo. T. Tippin, Vero, Florida

In the July issue of The Citrus Industry, Mr. Chas. H. Walker, formerly manager of the Polk County Sub-Exchange, clearly sets out by actual figures that it does not pay to grow poor fruit. His published statement shows that on his crop of 4431 boxes, he received for the fruit net at the packing house an average of 71¼ cents per box including all grades. Mr. Walker's further statement that "he believed his average for each grade and size compared favorably with any other packing house either in the Exchange or outside the Exchange," indicates that the quality of the fruit generally in that section is very low. Mr. Walker's article in which he so frankly calls attention to the seriousness of the subject, and the editorial comment by the editor of The Citrus Industry ought to be a stimulus to all citrus growers to strive to produce a higher grade of fruit.

While poor grades do not directly compete with high grade or fancy fruit, yet in a measure it hurts the sale of the better quality when the markets are crammed full of poor stuff. Consequently, the growers who are producing quantities of poor fruit are not only failing to make it a profitable business for themselves, but are making it more difficult for the growers who produce good fruit to realize what they are entitled to, and what they should receive for their efforts in this direction.

Not desiring to divert attention in the least way from the importance of what Mr. Walker presents in his article, but rather to emphasize it, I think it but proper in this connection to call the attention of the public to the fact that conditions as above referred to do not obtain all over Florida. In doing this, we not only show that better fruit is, and can be produced, but correct a wrong impression that might arise in the minds of those outside the state who may desire to engage in citrus growing or to become a purchaser of citrus fruit, that the entire industry in Florida is as indicated by Mr. Walker's experience.

To this end, I am glad to be able to submit the correct data for 500,000 boxes of citrus fruit shipped by one concern from this, the Indian River Section, this past season. This fruit was taken from more than 100 groves. The net price for the fruit received by the grower at the packing house, all grades included, was \$2.50 per box, grapefruit averaging practically \$2.00 per box for the fruit, and oranges \$3.00 per box. Of this pack, 2½ per cent was culls, 11,000 boxes, which went to the canning factory at an average price of 91 cents per box, which is almost 20 cents per box more than Mr. Walker received for his entire crop.

Of this entire pack, 69 per cent was first grade and averaged net for the

fruit at packing house, \$2.80.

17½ per cent second grade averaged \$1.90.

11 per cent common or plain, averaged \$1.53.

2½ per cent culls to cannery averaged \$.91.

I would not say that all the difference in results set out here in these two instances is due to difference in quality, for some of it, as far as price received is concerned, might be traceable to shrinkage from decay caused by rough handling and bruising of the fruit from the tree to the car. If the practice in the first instance is to have the picking, carting, packing, crate making, and nailing, and loading in car done by contract piece work and the per cent of decay was of any consequence, it might be chargeable to this practice. I believe citrus fruit is too delicate to be handled in the best way by contract labor. The shrinkage from decay of the 500,000 boxes referred to, was not over one per cent.

Plant and keep planted a home garden and eat something from it three times a day. Do that and eat less meat and other expensive concentrates and note the improvement in your feelings.

The up-to-date beekeeper no longer houses his bees in hollow logs or board boxes.

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Special Mixtures  
Insecticide Materials

# Horticulturist Back from Australia

(From the Bradentown Herald)

E. N. Reasoner, of Oneco, and the Royal Palm Nurseries, arrived home Wednesday night from a trip lasting five months, and which took him through the greater part of the United States, and belting the Pacific coast from Bellingham, Washington, which is close to the Canadian border, and as far south as northern Mexico; Australia, New Zealand, Hawaii and the South Sea islands.

On Mr. Reasoner's trip he traveled about twenty-eight thousand miles, seventeen thousand miles of which was by steamer, using seven different ships. The remainder of the mileage was made by train.

On the way to the Pacific coast he was joined by Guy A. Bryant, of Lincoln, Ill., an old school mate and, like Mr. Reasoner, owner of a great nursery. Mr. Bryant is a grand-nephew of the famous poet, William Cullen Bryant, and Mr. Reasoner said he proved to be an excellent and interesting traveling companion.

On the way across the Pacific to

Australia a stop was made at Honolulu and on the return trip a stay of several days was made on the island, which gave Mr. Reasoner abundant time to study the fauna and flora of the island and to visit the great volcanoes.

## A Wonderful Trip.

Their visit to Australia covered all the best parts of eastern and southern Australia, including Tasmania. They then crossed over to New Zealand. From New Zealand on the way back stops were made at the Fiji Islands, where the natives proved to be as interesting as the plants of the south seas.

Asked about the plants and fruits of the tropical countries, Mr. Reasoner said there is little to be found there that is not growing today in southern Florida. As far back as 1888 his nursery imported most of the palms and tropical fruits of the South Sea islands and has disseminated many of them in this state and southern California. He took particular note, however, of the fact that the pawpaw, or papaya, as it is correctly called, is used very

Seventeen

widely as a breakfast food on the islands. It is served with lemon. The passion fruit, which is grown in Florida, to some extent, is used for making ices, sherbets and ice creams.

Mr. Reasoner has been requested by leading publications to write a series of articles on his observations on this trip. He is one of the leading authorities on things horticultural in the United States.

## WILL CAN GRAPEFRUIT JUICE

Grapefruit juice, besides the regular fresh grapefruit, will be canned at the new plant being erected at Miami by the Dade County Citrus Sub-Exchange, it is announced by Manager B. E. Morrill. The product will be marketed by the Florida Citrus Exchange under its Sealheart brand, which has been adopted for all its canned goods.

Mechanics are now working on the new canning plant. Part of the machinery has been received, and it is expected that the plant will be ready to operate several weeks before the opening of the 1923-24 citrus season.

If your cattle are diseased, write to the Agricultural Extension Division, Gainesville, Florida, and ask for a copy of Bulletin 37.

Let us help you solve your Irrigation and

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# Worthington Pumping Equipment

Complete stock of Worthington  
GASOLINE AND KEROSENE ENGINES  
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DEEP WELL, CENTRIFUGAL and BOILER FEED PUMPS, PIPE VALVES  
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MULBERRY

(Get in touch with our Engineering Department)

FLORIDA

# GOOD CITRUS ORCHARD PRACTICE IN CALIFORNIA

Continued from page 14

ative to the proportion between the total amount of nitrogen and the amount of manure applied were brought out in this survey. The use of large quantities of barnyard manure, constituting over 60 per cent of the total quantity of nitrogen, were shown to result in maximum yields. A marked decrease in yields was found in the orchards where the percentage of nitrogen, applied in bulky, organic materials, dropped below 40 per cent. Converting the optimum amount of actual nitrogen into terms of the usual fertilizers applied: 10 tons of stable manure, 200 pounds of sulfate of ammonia, and 800 pounds of high-grade tankage per acre were found to give very satisfactory results.

The optimum amounts of water for maximum yields in the different districts as brought out by the survey are, for the coastal district approximately two acre-feet and for the intermediate and interior districts from three to three and one-half acre-feet per acre, exclusive of rainfall. The survey brought out very clearly the fact that in the interior sections, the majority of the growers are not applying sufficient irrigation water to result in maximum yields.

Much other valuable information was brought out in the survey which, it is hoped, will be presented to growers in the form of a bulletin. After all the various factors were analyzed with respect to yield, however, one of the remarkable findings of the survey is the wide variation between individual orchards with respect to production. Undoubtedly much of this is due to difference in the stocks on which the trees are propagated, and to difference in the productiveness of the strains from which the trees were budded. By far the greater part of it, however, is believed to be due to environmental conditions. The importance of orchard analysis with respect to efficiency, and the necessity of individual tree care and attention were strongly indicated by the survey.

## CALIFORNIA ORANGE CROP RATED AT 93 PER CENT

Los Angeles.—The coming orange crop is rated at 93 per cent, against 76 per cent a year ago and 91 per cent for the 10-year period. That tells the story better than a detailed report. There will be plenty of Navels and Valencia's as well, to go around.

The new lemon crop on June 1 was rated at 88 per cent against 63 last

## THE CITRUS INDUSTRY

June, and 87 for the 10-year average. July 1 has seen no change unless for the better. Fancy fruit is bringing \$6.50 to \$8.50 f. o. b., which again is some price for the growers, right in the face of plenty of other fruit and 10,000 cars of cantaloupes.

Mr. Peanut Grower, prepare ye now those stacking poles for the peanut crop, the cross pieces to be not less

than a foot from the ground. Do not wait till the crop is ready to stack. Put not off till tomorrow what can better be done today.

"New moon" or "full moon" farming is about as old as "newmoonia," and it is about as dependable as some of the promises that pass back and forth while the "newmoonia" patients are under the "spell."



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## WRITE TODAY FOR YOUR COPY

Live, interesting and readable, the **PACKING HOUSE NEWS** is a favorite magazine everywhere with thousands of growers, packers and shippers of fruits and vegetables.

Replete with valuable information, profusely illustrated, it deals with problems of packing and marketing as no other journal in the world.

You will find it so informative and essential to your business that you will want to keep a permanent file. 10 cents per copy, \$1.00 per year, free sample awaits your asking.

**Skinner Packing House News**  
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European Plan, Fireproof 300 Rooms With Baths

THE CENTER OF TAMPA

# Ocklawaha Pedigreed Citrus Trees

Standard varieties budded to Sour Orange and Rough Lemon root systems, also the leading "Fancy" varieties suitable for home orchard plantings, the entire list comprising 12 varieties on Sour Orange root and 18 varieties on Rough Lemon root.

## Ocklawaha Nurseries

LAKE JEM, FLA.

## Better Supplies FOR ORANGE PACKERS For Less Money

The more attention you give to packaging your fruit, the larger profit you put in your pocket.

Pack your oranges in Merryday Boxes. These boxes are strong and attractive looking, because uniformly light in color. Made from selected short leaf pine, practically free from heart.

The clean, smooth, bright appearance of Merryday Orange Boxes attracts attention, interests buyers and helps you to get top-of-the-market prices. These quality boxes offer you superior packaging at lowered cost.

When you need Cypress field boxes, Galvanized iron field box strapping, Pearson's cement coated box nails, plain and printed Wraps, Parcel post boxes, or Spruce ladders, write us. We specialize in Orange Packers' Supplies and will be glad to quote you on your requirements.

**W. A. Merryday Company**

Palatka, Florida.

## SULPHUR QUALITY EASILY TOLD BY SIMPLE TESTS

Continued from page 12

pal insecticidal and fungicidal value of sulphur is due. Such sulphur fumes or vaporizes at comparatively low temperatures. In fact, this action easily starts at normal temperature, and can even be noticed as the sack is opened. This odor is more apparent if a sample has been tightly sealed for some time in a container, such as a quart fruit jar. A crude ground sulphur is tasteless and odorless.

5. The larger the size of sack required to hold a given weight, the higher the quality and the greater the covering power of the Sublimed Flowers of Sulphur.

6. Place a pinch of the sulphur on the tongue and chew it between the teeth. Grit will at once be apparent if the sulphur is coarse. The best quality of Sublimed Flowers of Sulphur will be found to be as smooth as butter between the teeth, denoting extreme fineness and softness of the individual particles. The rubbing of a sample of sulphur between the hands is not nearly as sensitive a test as the above, as comparatively coarse sulphur feels fine to the touch.

7. Look at the printed guarantee on the sacks. A sulphur cannot be called "Sublimed," "Refined," or "Flowers of Sulphur" unless it has been put through the subliming process, which is the only known method for refining sulphur. Flowers of sulphur must be selected from those parts of the condensing chambers that produce only the lightest and fluffiest particles and it cannot be ground or manipulated in any way.

Apply these simple tests and it will be easy to tell whether you are getting a good quality of sulphur.

### WHY KILL THE GOOSE THAT LAYS THE GOLDEN EGGS?

Is the question asked by Manager H. G. Gumprecht who is manager of the Manatee County Citrus Sub-Exchange, and states that the present high rates on citrus fruits and vegetables is retarding distribution, which necessarily adds to the cost of production and greatly reduces the tonnage for the carrier, consequently less revenue for the railroads and less money for the growers, thereby proving high rates a loser to all concerned and a prosperity buster.

How any rate-making body and the railroads can still talk about additional increase in expenses, when faced by the above facts, is beyond the imagination of the average business man at least.

The time has come when plain talk

## THE CITRUS INDUSTRY

is in order, for we all recognize that the rates on perishable commodities is the very essence of life of these industries, which applies to both citrus fruit and vegetables.

The Florida Citrus Exchange has always and is again taking the lead to protect the grower's interests. It will be well to remember that this move means the protection of all growers regardless of their affiliations, and it will behoove them to work collectively, forgetting petty jealousy. Your personal interest is at stake, so let us rise up as one body and demand lower rates for perishables.

No sane person expects the railroads to haul freight at a loss, but we do know and believe that if the rates were readjusted—based on the facts as they are—considering the enormous increase in tonnage assured, the railroads could give us a much lower rate, which is absolutely necessary for the healthy growth and expansion of the perishable industry in Florida.

### BIG GROVE DEAL IN ALTURAS SECTION

The largest citrus grove in Polk county owned by one man, the Thomas T. Ashton tract of 640 acres at Al-

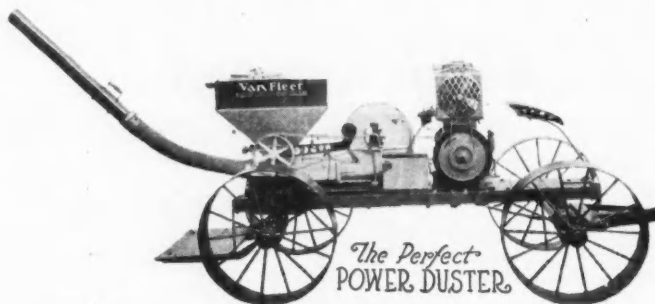
turas, of which 153 acres are planted to grapefruit, oranges and tangerines, has been sold to J. W. Grant, of the Grant Hardware Co., of Bartow. The price paid is not made public, but it is said to be well over \$200,000.

Mr. Grant, with his brothers, came to Bartow last May from Lothan, Ala. They purchased the stock and lease of the Bartow Hardware Company shortly after their arrival and changed the name to the Grant Hardware Co. Later Mr. Grant bought the home of Rev. Jas. H. Davet, one of the most desirable residence properties in the city, and also added to his holdings two small groves in the Lake Garfield section of Polk county.

### GOOD SEASON AT MT. DORA

Citrus shipments by the Mount Dora Citrus Growers' Association for the season just closed totalled 93,990 boxes, according to the report of Manager James Simpson. Total receipts for this fruit were \$304,433, of which \$206,889 was paid to the growers, \$50,029 went for material for packing, and \$47,459 for labor. Considering the quality of fruit and general market conditions of the past season, the returns realized by the growers are considered to be very good.

## The "Perfect" Power Duster



### ANNOUNCING A NEW DUSTER

In announcing the "PERFECT" POWER DUSTER, we feel we have a product that will thoroughly meet the dusting requirements of Florida Growers. Superior features of this machine will immediately recommend it to users of Dusting Machines.

#### SIMPLICITY

One of the principal features of the "PERFECT" is its simplicity.

#### THE FAN

In the Fan we have made a distinct improvement over any other duster.

#### THE DUST HOPPER

Is built low and will contain 100 pounds of dust easily.

#### THE FEED CONTROL

Is conveniently arranged to the hand of the operator.

#### DEMONSTRATIONS

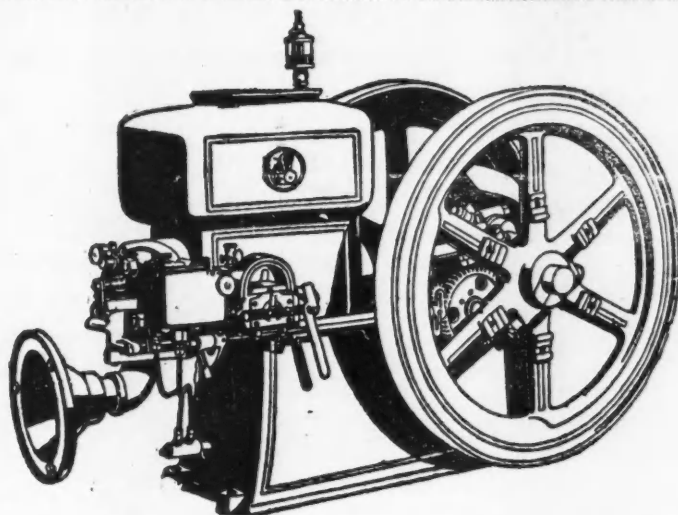
We will gladly give demonstrations to interested parties.

#### THE GUARANTEE

These machines are made by expert workmen, and are guaranteed to give absolute satisfaction and the highest efficiency. Any parts found defective in material or workmanship will be replaced free of charge.

## THE VAN FLEET CO.

Manufacturers and Distributors of  
Spraying and Dusting Machines and Accessories  
FLORENCE VILLA FLORIDA



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Most dependable of all  
Farm Engines

NEW PRICES JUST ANNOUNCED BY THE FACTORY enable us to sell HERCULES at prices that will satisfy you. Your neighbor who has one will tell you it is always reliable. THE 8 MILLION DOLLAR HERCULES CORPORATION stands back of ITS 5-YEAR GUARANTEE.

GET OUR PRICES ON THE FLORIDA SPRINKLER BEFORE YOU IRRIGATE

**COATES PLUMBING SUPPLY CO.**  
**TAMPA, FLORIDA**

## Extra Values in Transport's Advance Construction

Transport models offer you greater truck values not only because they are built of the best specialized units, but because they represent in every single detail the highest attainments in motor truck engineering and designing. Transports embody every important advance which seasoned experience has proved practical.

The superior quality of Transport workmanship is reflected in the perfection of some of the most noteworthy features of motor truck construction, such as Automatic Chassis Lubrication—Transport's improvement of the Drive Shaft Brake—and Specially Designed Radius Rod Equipment. A part of the extra value that goes with the Transport.

**Automatic Chassis Lubrication:** All parts requiring grease are equipped with nipples for easy coupling to the Alemite grease gun, which, with 500 pounds maximum pressure, positively forces the lubricant into the closest-fitting bearing and wearing parts, ejecting old grease, grit and dirt. The well and wick system is used on all spring bolts and radius rod bolts. By capillary attraction, oil is drawn the full length of bolt, and in the case of springs, an even distribution between all leaves is assured. This system saves you time and labor and assures more thorough lubrication.

**Drive Shaft Brake:** Models 35, 55, 60 and 75 are equipped with specially designed Transport Drive

Shaft Service Brake, which is positive in action and applies braking pressure equally on both rear wheels. This brake checks the tendency to skid when turning a corner by proper control of the faster traveling wheel. A spring cushion on brake rod prevents grabbing action of brakes resulting from too sudden application by driver.

**Radius Rod Equipment:** Two strong steel rods, one on each side of frame held in place by means of all-steel brackets, which are securely riveted and bolted to frame and rear axle respectively, hold rear wheels in perfect alignment and make it impossible for rear axle to slip on springs, assuring perfect operation of braking mechanism under all conditions.

## Bruce Motor Truck Co.

State Distributors

Tampa, Florida

# Big Citrus Development in Lake County

(Eustis Lake Region)

While not one of the largest in point of acreage, what promises to be one of the most important citrus development propositions in the county will shortly begin in the Lake Eldorado section, five miles northeast of Eustis. A deal was closed Saturday whereby Mr. C. M. Slaughter, of Orlando, well known manufacturer of fertilizers and insecticides and large holder of citrus properties in this and other counties, became the owner of 100 acres of the best citrus land in this or any other section of the county. The land was purchased of Stuart R. Greiner and is a part of the land formerly owned by Mr. J. G. Griffin. It touches the north end of beautiful Lake Eldorado and is ideally located for citrus fruit culture, having the advantage of splendid natural air drainage and is also protected by thousands of acres of lake and prairie on the northwest. The land is high pine with a substratum of yellow sand underlaid with clay. Work of clearing and stumping the land and preparing it for planting will begin just as soon as a force of workmen can be assembled, which means within a week or ten days. Mr. I. W. Cobb, who has been superintendent of Mr. Slaughter's large farm and grove on the west side of Lake Eldorado since it was acquired by Mr. Slaughter and his associates three years ago, will have charge of the development work, which means that it will not only be done right, but also that the work will be pushed with all possible dispatch. Mr. Cobb, owing to his years of experience and the thoroughness with which he does things, is recognized as one of the leading authorities in the county on all questions relating to citrus fruit culture. The new owner already has contracted for sufficient nursery stock to plant the entire acreage. After it is planted the entire tract will be subdivided and put on the market in tracts to suit the needs of purchasers. The tract surrounds a beautiful deep clear water lake, forming ideal locations for home sites for those who desire to live on their purchases. Steps are already being taken to straighten, widen and hard surface the county road leading from the Eustis-Cassia highway to Umatilla. This road bounds the development property on the west. The Lake Eldorado section is being developed rapidly. Mr. H. B. Smith, of Buffalo, N. Y., will erect a modern

winter home facing the lake on the west side, on the property recently acquired by him and Mr. Cobb. Also Mr. Slaughter will erect an additional bungalow on his property on the lake, the exact location of which has not yet been determined.

## CITRUS SHIPMENTS CONTINUE

Shipments of grapefruit and oranges by the Florida Citrus Exchange will probably continue this year well into August, according to George A. Scott, general sales manager of the Exchange.

"Due to the unusual growing conditions of last year, there has been an exceptional large quantity of late fruit," he says. "The Florida shipping season usually closes about the first of July, but because of this situation actual shipments will be made for at least a month longer.

"There is reported to be considerable fruit still left in a few localities of the state, though compared with the entire crop, the percentage is exceedingly small. Some of the fruit because of its poor carrying condition and the lack of interest on the part of buyers towards ordinary stock, may not be shipped." The Florida Citrus Exchange shipped about forty cars of fruit the past week, the bulk of which was grapefruit.

## PROTEST INCREASED RATES

A strong protest against the proposed raise in rates on refrigerator car service August 10 was adopted unanimously by the Oldsmar Growers' Association. It has been sent to the Interstate Commerce Commission at Washington and a copy was filed with the Florida State Railroad Commission.

The growers say that farmers in all parts of the United States have enough troubles now, on account of the general low range of prices for their products. If the Florida fruit and vegetable growers are not quite so bad off in this respect as the farmers in some other states, it is a fact that the prices received are too low. The proposed increase in rates, taken together with the low range of prices prevailing lately, would create a serious handicap. The growers are not in any shape to stand any increase in rates.



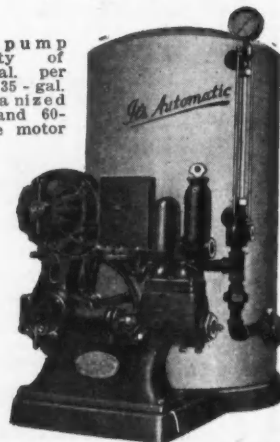
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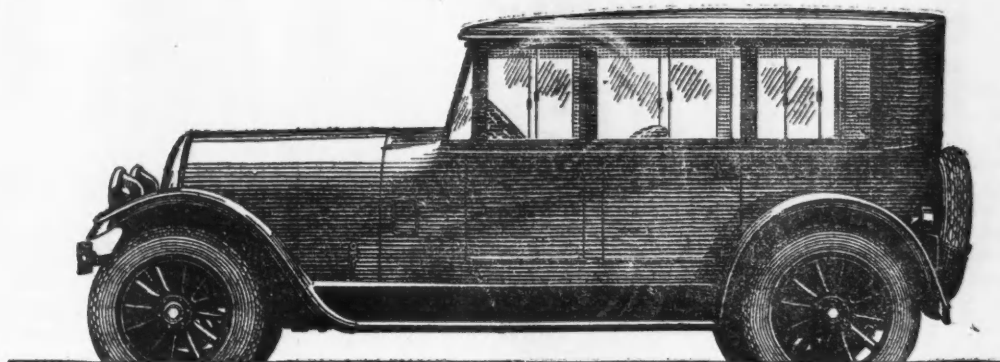
Delivers an abundance of water under pressure, at a cost of two pennies a day or less. Operates from any electric circuit or home light plant system. Simple, automatic, quiet and dependable. Other types and sizes at proportionate prices. Literature and the name of your dealer will be gladly furnished on request.

**Fairbanks, Morse & Co.**

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# The New FRANKLIN DEMI-SEDAN \$2250

F.O.B. SYRACUSE

Creating this new and exclusive four-door body design to go with Franklin road ability has given another impulse to Franklin popularity. The Demi-Sedan provides for whatever degree of enclosure you desire, and it is also out of the ordinary in riding comfort and driving ease. Its permanent top, plate-glass windows and leather upholstery are as substantial and enduring as they are fine-looking. Yet note the price—little above an open car.

Owen-Franklin Motor Co., Tampa, Fla.

Franklin-Miami Co., Miami, Fla.

Franklin Motor Car Co., Orlando, Fla.

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# Keller Heating Company Resumes Operations

By W. E. Boiles

The Keller Heating Company has resumed operations in its foundry at Oldsmar, manufacturing a large line of economical oil heaters for groves, orchards and truck farms, also hot water heaters for hotels, cafeterias, laundries, dairies, cigar factories, bottling works, pressing clubs and other establishments which use not more than 50 pounds of steam. A large force of men is already employed, and the orders on hand will make it necessary to hire more molders. The general line includes the Vlag automatic grove and orchard heater, the Oldsmar frost protector and the Keller hot water heater especially designed to supply hot water for heating residences economically.

Orders for several thousand Vlag grove heaters have been received, including one for 5,000 heaters from the Mobile Horticultural Association, of Mobile, Ala., for protecting Satsuma orange groves. Some of the largest growers in Florida are using it, including the American Fruit Growers, Inc. After a competitive demonstration of grove heaters at DeLand by the DeLand Fruit Growers' Association, it was said by those who witnessed the tests that the Vlag automatic heater is the last word in grove and orchard heaters. It is purely a Florida invention and reflects great credit on the genius and enterprise of this state. This heater burned 46 hours with absolutely no attention, at the end of which time it was taken down and found to be entirely free from carbon deposits. The test was directed by Manager Pay, of the DeLand Fruit Growers' Association, who placed his personal order and recommended the heater to the members of his association. The men who saw the demonstration placed their combined orders for 2,000 heaters. The chief advantages of this Vlag heater are that there is no chance for rain to get into the oil container, and its freedom from carbon, and its long-time action. A thirty-gallon drum of cheap oil will run it for thirty hours of either continuous or intermittent operation without refilling.

The Keller heater will furnish hot water at one-fourth the minimum gas rate, or one-twelfth of the maximum gas rate. It is the intention of the company to manufacture as many of these heaters as possible at the Oldsmar plant, the capacity being limited by the number of skilled men.

The pig iron and coke are from Alabama. Frank E. Keller, of Coldwater, Mich., an experienced foundryman, has moved to Oldsmar with his family and is manager of the plant. Louis B. Keller is secretary. C. D. Cooley, of Tampa, who made a success of the moving picture business in Tampa, has associated himself with the Keller Heating Co., and will act in the capacity of treasurer.

President H. J. Keller said: "Our representative is arranging a series of demonstrations in Georgia, Alabama, North and South Carolina and Virginia, in the peach and apple orchard districts, and the growers there expect to buy many thousand Vlag heaters. We also will do light casting work for the trade."

## DO NOT SPRAY FRUIT

### DURING HOTTEST HOURS

#### OF THE MIDSUMMER DAYS

Spraying fruit during the warmest hours of the day in the warm months is liable to result in spray-burned fruit, fruit that does not look nor sell well. Such is the experience of many experienced growers and specialists.

Much of the shipped fruit of last year that was condemned or sold for exceedingly low prices was burned in the grove, according to plant disease specialists of the Florida Experiment Station. A large amount of this condemned fruit could be put on the market as brights or goldens and would bring good prices, if not spray burned. Spraying during the warmest hours of the warmest days should be avoided, it is said.

The tissue of spray-burned fruit is weakened and is more liable to be attacked by the fungi that cause decay. Spray early in the morning or late in the afternoon, experience teaches.

## FIGHT RATE INCREASE

Vigorous protest to the proposed 10 to 20 per cent increase in refrigeration rates for all Florida fruit and vegetable shipments has been filed with the Interstate Commerce Commission by the Florida Citrus Exchange. Traffic Manager E. D. Dow, of this organization, has also issued a statement declaring that rates on citrus, instead of being raised, should be revised downward. The Florida Citrus Exchange is taking steps to have the citrus growers of the state organized to bring about an equitable adjustment of rates.

Original Introducers

## Adapted Carmen

and other

## Adapted Bunch Grapes

into Florida

We also introduced

Nursery Grown

Orchard Tree Blueberries

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Established 10 Years

Acreage vineyards of our Adapted Grapes have been yielding highly profitable crops in Florida year after year for upwards of a decade. They have proven to be long-lived varieties of bunch grapes. The delicious quality of the fruit has been convincing to the general public since before the great World War.

It does not require many years before you reap satisfactory returns in the adapted bunch grape growing industry in Florida. In eighteen months after planting, with reasonable care, you will get a paying crop of fruit, and in thirty months you will be surprised at the very liberal returns.

It would be wise to get your orders in early for next season.

Special prices and terms on early orders.

## Adapted Nurseries

ZIMMERMAN BROS.

Plant and Soil Specialists.

Main Office,

TAMPA, FLORIDA

# LEE Tires

## "SMILE AT MILES"

### THERE'S A REASON FOR THE SMILE

When customers return for "More of the same thing," it's safe to assume that the "thing" has merit.

The volume of repeat business is proof of the merit of Lee Tires—proof of the greater mileage, greater comfort and greater dependability of Lee Tires under all road and all weather conditions.

Florida Citrus Growers appreciate and want a tire that gives them a maximum of mileage with a minimum of worry.

With your cars and trucks equipped with "LEE TIRES" you are assured of this service and safety.

We have dealers in practically every town in Florida assuring you of statewide service. If there is no dealer in your town, write us direct for prices.

## LEE TIRE COMPANY of FLORIDA, Inc.

**Tampa**  
710 Ashley St.

**Jacksonville**  
622 W. Forsyth St.

## Passenger and Freight Service to New York

### Summer Excursion Fare \$59.18

Tickets on sale until September 30th. Good returning as late as October 31st.

Steamers scheduled to Sail From Jacksonville Every Monday, Thursday and Saturday, at 2 p. m., as follows:

(CALLING AT CHARLESTON, S. C.)

S. S. APACHE	Aug. 9, 18, 27
S. S. COMANCHE	Aug. 2, 11, 20, 30
S. S. LENAPE	Aug. 4, 13, 23
S. S. ARAPAHOE	Aug. 6, 16, 25

**JACKSONVILLE TO CHARLESTON AND RETURN, \$18.00**

Fares include meals and stateroom berth. Suites with private baths, some with double bed, others with twin beds, or, staterooms with connecting private lavatory without bath, or, large family rooms accommodating 3 and 4 people, may be obtained at additional cost varying according to location, size, etc.

**St. Johns River Trips Between Sanford and Jacksonville**

Round Trip in Either Direction, Fare \$10.00 Including Meals and Berth

Freight Accepted and Forwarded on all Steamers with Special Attention to Citrus Fruits and Vegetables in Ventilated Compartments

## CLYDE LINE

G. D. Raymond, Agent.  
L. S. Scoble, Fla. Freight Agt.

H. G. Wenzel, Gen. So. Pass. Agt.  
H. G. White, General Agent.

Jacksonville, Fla.

## Porto Rico Expects Smaller Crops

Nueva Gerona, Isle of Pines, W. I.—First announcements of the 1923-24 citrus crop will soon be making their appearance. The general impression is that the crop as a whole will be smaller than a year ago, although there are some groves that will yield much better. The first shipments will probably be about the same date as a year ago.

All shipping arrangements have not been made for the coming year. In this respect, however, it can be stated that the growers are in a stronger position than ever. For a time it appeared as though the entire transportation works, as well as that represented by local interests, was against the grower. At that time \$1.14 crate was paid to get local fruit on the dock in New York.

Each year there has been some improvement marked, due to the careful management of the local shippers in co-operation, and the rate now is 64c on the dock in New York, with every indication that the rate will eventually come down another 4c. This year there is a prospect that the growers will have the advantage of a direct shipment and a fair rate to Chicago, something that has not been enjoyed before. As the present rate to Chicago is about \$1.50, the new arrangement will save the growers and shippers 40 to 45c crate.

The treaty agitation in the United States Senate during the last session of congress almost found the Isle of Pines colonists asleep at the switch. something that is not likely to occur again. The main trouble in this connection, it is believed, is not to be able to kill the proposed treaty, but to finance the fight. Interests that have the most at stake are slow in coming forward with the needed support, being content to believe that the small colonist and grower will be too vitally interested to withhold his financial support. In this case it means that the small owner and grower will give to the utmost limit to finance the fight, while the large landowner will hold off as long as possible and perhaps be able to "get by" with a minimum contribution.

Some of the larger grove interests here are taking a great deal of interest in irrigation and a number of deep wells will be drilled in the near future, it is believed. The matter of

water in volume at the right time is the most mooted question confronting the Isle grower at the present time. Although there are many times in the year when there is too much water for some classes of agriculture, the citrus fruit grower hardly ever suffers, unless, indeed, it is during the shipping season, but there are many times when a supply of water is badly needed.

### MARK PECAN TREES THAT HAVE DIEBACK & PRUNE THOSE TREES NEXT FALL

Pecan dieback is a fungous disease which is recognized by the presence of minute, black crusts embedded in somewhat elongated cracks or ruptures in the bark of the diseased limbs and dead twigs. Toward the base of the diseased twig the bark often has a water-soaked, waxy appearance, and there is usually a definite margin between the infected and healthy tissue.

Numerous young shoots often start out further back on the branches which have been partly killed, and as the disease spreads these shoots become infected and later die. From these clusters of short branches dieback is often mistaken for rosette. However, in the case of dieback there is no deformity or crumpling of the leaves, which is one of the common symptoms of rosette.

Dieback may be controlled by pruning out the dead wood and burning it. according to specialists of the Florida Experiment Station. The disease is not easily recognized when the trees are in the dormant stage, so it is advisable to go over the trees during the summer and mark all which show any signs of dieback. In this way the grower is able in fall to prune out quickly and thoroughly all the diseased wood.

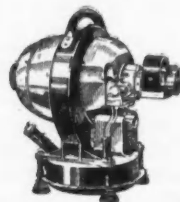
In pruning for dieback it is necessary to cut back the branches well beyond the visibly diseased areas, for the fungus often penetrates into the wood for some distance beyond its outward appearance. All trees that show a tendency toward rosette should be removed as they will form a harboring place for the dieback fungus.

If you'd give house ants the "gate," Mix 'em up a poisoned bait. Killing those that nest outside Can be done with bisulphide.

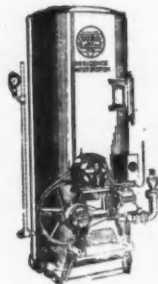
## Home Light Plant

**\$245.00**

Complete



Have your own electric lights. Write us for literature or demonstration



Automatic water systems eliminating overhead tanks. Running water to all parts of your house and out-buildings.

**We make complete installations of Water Systems, Electric Light plants and Irrigation Systems.**

We carry a complete stock of 1½ to 20 horse power Engines, and can make immediate delivery and installation. Water systems in stock for immediate deliveries on all sizes.

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Distributors of  
Cushman Engines  
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# CLYDE GLENN ENGRAVING CO.

Tampa, Florida.



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DESIGNS AND  
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FOR LABELS AND  
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OF ALL KINDS



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in Copper or Zinc  
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## The Coffee With "The Taste That Satisfies"



# SENATE

Coffee  
is sold by your  
Grocer

"NONE BETTER"

Tampa Coffee Mills, Manufacturers Tampa, Fla.

## The 'FRIEND' Sprayer

The highest grade sprayer that money and brains can build.

Over 200 satisfied users in Florida.

We recommend the BX models for Florida, either in the underslung or wagon type.

We will carry these sprayers at Tampa, and also a complete line of repair parts.

If you are thinking of buying a sprayer, DON'T buy until you have investigated the "FRIEND."

### Citrus Growers Supply Co.

State Distributors

303 Krause Bldg.,

Tampa, Florida

## Tampan's Father Owned Orange Grove in India

Dr. Cecil Vaughan, of Tampa, Florida, whose father once owned an orange grove in India, was asked by The Citrus Industry to give his recollections of methods used in the growing of citrus fruits in that far-off land. Dr. Vaughan's response is given herewith. The Citrus Industry regrets that the Doctor is unable to give our readers a more complete description of his father's citrus activities in India.

Mr. S. L. Frisbie,  
Editor The Citrus Industry,  
Tampa, Florida.

Dear Mr. Frisbie:

My recollections of the orange grove in Ghazeepore, Central India, is rather hazy. I was very young at the time, between the ages of seven and nine, but I do remember we had fine oranges, thin skinned, sweet, juicy and fragrant, and one particular tree was our favorite, a small orange, no larger than an English walnut, we used

to eat rind and all.

Once a year the grove was plowed and cow dung used around the trees for fertilizer. During the months of June and July, the dry season, irrigation was carried out continuously, and in a very primitive manner.

There were other fruit trees, mangoes, guavas, and elichi and some lemons, in all about fifty acres.

It would afford me great pleasure if I could give an intelligent account of the industry, but you will understand I was not old enough to take in the details—all we children cared for was an abundance of fruit whenever we wished for it.

My father very seldom visited the grove, the work was left entirely to the malies or native gardeners, and during the second year of our stay in Ghazeepore the grove was leased to some natives, who disposed of the fruit in the local market.

Yours very truly,

CECIL VAUGHAN.

### THE TREE, THE UNIT OF THE CITRUS INDUSTRY

Continued from page 9

even adding lime or manure to this treatment in order to increase the fertility of old land.

Of course it takes experience to learn all these things, and I realize that a large percentage of groves are owned by persons that have taken up the industry without a previous knowledge of it—strangers to the climate and to the semi-tropical conditions. Citrus growers, taken in the aggregate, are of a high order of intelligence. We must realize that citrus culture requires both mental and physical energy—a grower will be rewarded in proportion to the amount of energy he expends. If the grower will only remember this, he will be successful with his grove and will be able to live a free and independent life. In the average business, demanding the same capital, more time is required, the work is more confining, more exacting; always there is the thought of having to please the buying public, and at a certain age he is apt to feel pushed aside. Nothing of this sort can affect the citrus rancher who cares for his grove wisely. He is never so old that he is forced to retire. His life is a life of independence, and he grows old gracefully surrounded by a competence, a home, and peace.

Lastly, let me say a word about the Farm Advisor Farm Bureau System which is the recognized medium through which the extension work of the United States Department of Agriculture as well as the work of the various state colleges is done. The farm bureau system is today undoubtedly the greatest educational movement affecting American agriculture. It was launched 12 years ago. There are now more than 2,000 counties in forty or more states in which county farm bureaus have been organized. These bureaus are constantly at work on problems affecting the territory in which they are located. Our own Los Angeles county Farm Bureau is doing some fine work.

So keep in touch with your farm bureau. Keep in touch with each tree in your grove. Use the maximum of mental and physical energy, and success will be yours.

### GETTING READY FOR OPERATION

Saw mills of the Exchange Supply Company, a subsidiary organization to the Florida Citrus Exchange, are now being overhauled and made ready for a record business during the 1923-24 season. Manager C. H. Walker says the mills will probably be operating at their full capacity by September 1.



## Service to Growers Built This Immense Business.

V-C Fertilizers come to you from the largest makers of fertilizers in the world. This big business was, and is, made possible only by superior V-C service, and the known dependability of V-C mixtures.

V-C formulas are calculated for every varied need in the care and cultivation of citrus trees. V-C experts are working constantly for the benefit and the advancement of citrus growing. The Florida division of this company is dedicated to the solution of Florida growing problems.

For nearly a quarter-century we have been serving the growers; and it is a matter of pride that many of the customers of the early years of our endeavor are today numbered among our best customers.

V-C Fertilizers aided largely in building their successes. Today they continue to rely upon them; and advise others to do likewise.

Write us your needs.

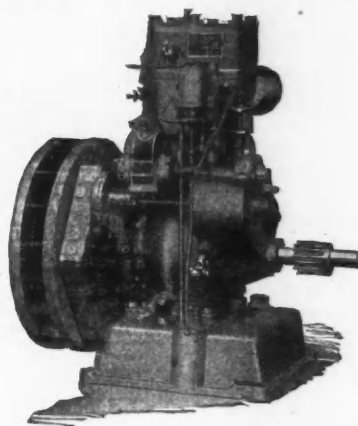
**Virginia-Carolina  
Chemical Company**

Florida Division

E. B. BROWN, Manager

Jacksonville, Fla.





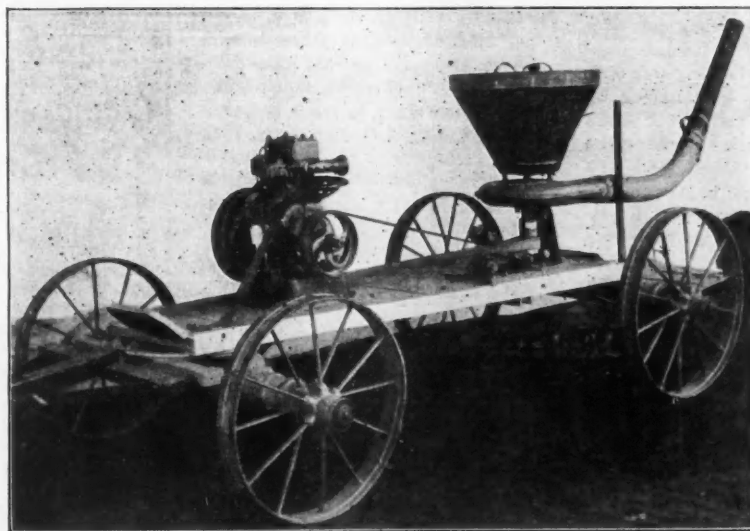
### THE BEAN ENGINE

#### Features:

**Compactness—Large Bearings—Enclosed Parts—Volume Governor—Self Contained  
Perfect Balance—Light Weight**

The Bean Engine has been approved by the Society of Automotive Engineers as being the most sturdy and dependable for its Horse Power. It is a compact unit with extra large bearings, wearing parts enclosed and protected from dust and dirt and running in oil. The Volume Governor insures steadiness at all speeds.

The Bean Engine is for those who demand the best, and owners of spraying or dusting outfits who are having engine trouble will do well to replace their engine with a BEAN.



### The Bean Duster is Equipped with 4 h. p. Bean Enclosed Engine

In the Bean Duster we offer the latest development in Power Duster Equipment. Its SIMPLICITY and COMPACTNESS with assured DURABILITY will appeal to you. This duster will handle satisfactorily the PURE SUPERFINE GROUND SULPHUR, the fineness, purity, and price of which make it unquestionably the most economical form of dusting sulphur.

#### IDEAL INSECTICIDES AND DUST MATERIALS

are of high quality and contain active ingredients that insure maximum satisfaction for the control and prevention of insects and diseases in the grove and field. In IDEAL SPRAY and DUST materials you get the highest quality products obtainable for the purposes for which they are recommended and at prices consistent with their quality.

## FLORIDA AGRICULTURAL SUPPLY COMPANY

JACKSONVILLE, FLA.

LAKE WALES, FLA.

(Buy Bean Dusters through any Branch House of Wilson & Toomer Fertilizer Company.)

### Thirty

## INSECTS INJURIOUS TO CROPS OF THE SOUTH

Continued from page 6

necessary to reintroduce the fungi. Applications of sulphur solution on account of mites should be directed against the fruit and the outside of the trees in the case of rust mite, although in case of red spiders a more thorough application may be necessary. At all events, sulphur solutions have in general been found to be only slightly, when at all, injurious to the entomogenous fungi.

The Southern Green Stink Bug (*Nezara viridula* Linn.) is at times a pest of importance, but its damage is not as constant as that caused by the whitefly and the scale insects mentioned above.

These bugs, like all true bugs of the entomologists, are sucking insects and frequently migrate to citrus trees after their favorite vegetation (cowpeas, beggarweed, velvet bean and other green plants) have died. The injury they can do by puncturing the fruit with their powerful beaks is something really to be dreaded.

Whenever the bugs are on the cover crop this should be cut about mid-September before many of the bugs can fly. The cutting of the cover crop should, furthermore, be initiated by the scythe, cutting it down about the trees first and in that way driving the bugs out toward the middles. The mowing machine may then complete the cutting, thus leaving the immature bugs to die on the drying cover crop. Whenever the bugs occur in the trees, they may be collected by shaking them, early in the morning while sluggish from the coolness of the night, into suitably constructed nets and destroying them.

### Guava

The two principal insect pests in Florida of this very valuable fruit are the Pyriform Scale (*Pulvinaria pyrifomis* Ckll.) and the Green Shield Scale (*Pulvinaria psidii* Mask.). The first one is the most widely distributed and may occur wherever guavas are grown. The second one named is also frequently plentiful, but in general does not occur as far north, its distribution being very generally confined to the southern half of Florida, whereas specimens of the Pyriform Scale have been received from as far north as Pensacola (on *Rhynchospermum*). This is probably accounted for by the fact that the last named scale has harder plants among its hosts, such as *Rhynchospermum* and English Ivy, for instance. Both scales produce quite the typical scale injury.

Treatment, when necessary, may

## THE CITRUS INDUSTRY

consist of spraying with soap solutions or some of the common oil sprays. While the Green Shield Scale is apparently controlled by a minute parasite, the Pyriform Scale has been observed to be kept nicely under control by the Cuban *Aschersonia* fungus (*Aschersonia cubensis*).

### Papaya.

The papaya, also called melon papaw (*Carica papaya* L.) is not a fruit of commercial importance in the sense that it is shipped to northern markets, but it is nevertheless grown in considerable quantities at the southern end of the Florida peninsula and as a local food supply is of very considerable importance. The principal pest of this plant is the Papaya Fruit Fly (*Toxotrypana curvicauda* Gerst.).

The Papaya Fruit Fly is a large insect for a fly, with a very long ovipositor with which it penetrates the skin and fleshy part of the papaya and deposits its eggs inside the seed cavity. The maggots feed and develop among the seeds but later leave the fruit, working their way through the ripened fleshy part, to drop and pupate in the soil. Varieties of the papaya with thicker flesh are rarely found infested, and it is the opinion of those who have carried on the investigation of this insect, that its ovipositor is too short to reach the seed cavity of the thick-fleshed kinds, thus making them largely immune to infestation. The planting of varieties with thick flesh has therefore been recommended.

### THROUGH RATES TO THE PACIFIC COAST

ORLANDO, Aug. 6.—Good news for Florida shippers is contained in advices just received by J. R. Crenshaw, traffic manager, American Fruit Growers, Inc., of the allowance of through rate on mixed car loads of oranges and grapefruit to points in Oregon, Washington, British Columbia, Idaho, Colorado and Wyoming. Where both oranges and grapefruit are shipped in the same car the application of the new rate can save as much as \$400 per car.

The American Fruit Growers, Inc., has been working on this proposition for some time. Previously there was a rate on mixed car loads of lemons, limes, oranges and tangerines from Florida, also a rate on grapefruit in straight car loads. Therefore when oranges and grapefruit were mixed in the same car the carriers charged the minimum of 26,000 lbs. on each. Now the minimum of only 26,000 lbs. will be charged at what was previously the through rate on grapefruit alone. Mr. Crenshaw's advices indicate that supplement to the tariff to this effect will shortly be issued.

H. Harold Hume, Wm. P. Simmons, President, Vice-President  
D. A. Morrison, Jr., Secty. & Treas.  
BEST FERTILIZERS, INSECTICIDES,  
SPRAYERS, POULTRY SUPPLIES  
Honest Goods, Fair Prices, Prompt Ship-  
ment. Ask your neighbor—He knows  
"Get new Fall Price List before Buying"  
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Jacksonville, Florida.

## SKINNER SANDPROOF SPRAYER "FOR BETTER SPRAYING"

The exclusive STRINE adjustable plunger makes its pump action more efficient, its life longer.  
All Working Parts Incased in Oil;  
Sandproof  
Strong, durable, easily handled.  
Excels in pressure and pumping capacity. Turns in 8 foot radius.  
Write for catalog today.

### SKINNER MACHINERY CO.

Gulf Ave., Dinedin, Fla.  
World's Largest Manufacturers of  
Fruit and Vegetable Packing  
Equipment.



## Prepare Now for the Planting of Your Orange or Grapefruit Grove

While Rutherford B. Hayes was president of the United States, before Bloxham was governor of Florida, Buckeye Nurseries were leaders in the citrus industry of this state—just as they are today.

For forty-three years Gillett-grown trees have been producing the widely-heralded, big-money revenues in the profitable orange and grapefruit groves of Florida. Buckeye has a reputation to maintain. It will maintain it.

Buckeye's estimated production for the season of 1923-24 is nearly 800,000 trees. More than half of these have already been reserved by wise and experienced growers. It is now indicated that next year's demand for dependable citrus trees will again be in excess of the supply.

Consult Buckeye Nurseries now as to the varieties and stocks you will want to plant.

## Buckeye Nurseries, Inc.

820 Citrus Exchange Bldg.,

Tampa, Florida.

Largest Exclusively Citrus Nurseries in the World.

# **Something New In Grove Heating**

## **The**

# **Vlag Automatic Heater**

### **Gives Protection That Protects**

The VLAG Automatic Frost Protector is what the Citrus Growers have been waiting for. Here are some of the features that will immediately recommend it to the grove owner.

Will burn continuously regardless of weather conditions without any attention as long as the supply of oil lasts.

Absolutely dependable.

Oil containers of a capacity sufficient to keep the heater in operation from 20 to 50 hours; by replacing empty container with full one the heater is again ready for an additional 20 to 50 hours firing.

Oil containers can be changed without extinguishing the heater.

Can be lighted in one second.

Easily regulated to give any degree of heat desired up to its maximum capacity.

Produces no smoke.

Needs no cleaning for it does not accumulate carbon.

The actual performance of this heater has never been equalled by any grove or orchard heater on the market regardless of type or cost.

Radiates more heat than any other heater.

Heats closer to the ground.

Is absolutely water-proof.

Water in the oil has no detrimental effect on the performance of the heater

Because of greater heat radiation fewer heaters are needed per acre.

Guaranteed for ten years against rusting out or any defect in material or workmanship.

We are ready to prove our claims by demonstrating this heater in competition with any or all other types of orchard or grove heaters.

Phone, Write or Wire.

**Manufactured by**  
**Keller Heating Co., Oldsmar, Fla.**  
**Agents**

**Piet Vlag, West Tampa**  
**General Distributors**

# GROVE PROBLEMS

Continued from page 7

to, or dislike to, cross. However, make sure that the tree limbs do not reach the ground, grass or weeds; for if there is anything on the tree to attract them they will find a way there if possible, even if the trunk is protected.

Commercial tree-banding sticky material may be applied with a brush, but Mr. Horton, of the Bureau of Entomology, found that by making a mixture of one part by weight of flowers of sulphur with six parts of tree-banding sticky material (at your druggist's) made the most effective banding material tried. A single application of this material has kept trees free from ants for several months during hot weather.

Mix the sulphur and commercial banding material thoroughly and apply with a brush, making a band around the trunk about three inches wide. I have never seen any serious injury to trees from direct application of this mixture. As a precaution, some apply a thin coating of melted paraffin with a brush, which hardens very quickly, after which the above mixture is applied as directed.

Ants which are on the tree at time of banding will soon drop off. As ants are especially fond of the honeydew secreted by various insects, would suggest that you examine the trees for such insects and if found that you spray with a good insecticide for their control.

## ISLE OF PINES SENDS RECORD-BREAKING GRAPEFRUIT SHIPMENT TO UNITED STATES

Introduced by American farmers shortly after the Spanish-American war, grapefruit growing on the Isle of Pines has progressed speedily to the point where it is now the principal product of the island. The shipment of 229,621 crates last season to the United States has broken all existing records. Before grapefruit cultivation by Americans, no attention was paid to them, and there were but few grapefruit trees in the island, Consul Forman informs the Department of Commerce. When new varieties were introduced from Florida and elsewhere the industry commenced to thrive, and modern methods of cultivation and packing are now practiced. The Walters variety is by far the leading crop. Conditions of soil and climate are very favorable, frost being unknown. The fruit which ripens in time to be shipped early in August is designated as "early" fruit and arrives on the markets be-

# THE CITRUS INDUSTRY

fore Florida grapefruit is ready to ship.

A crop of cowpeas and sorghum sown together in summer should furnish a much better forage crop than the fodder farmers usually persist in pulling. Planted later than July, however, this hay crop will be light.

Brown sugar will not get hard and lumpy if it is kept in an open jar or canister in the ice box.

## CLASSIFIED ADVERTISEMENTS

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

## REAL ESTATE

**FOR SALE:** Splendid solidly bearing orange grove in one of the best orange producing sections of the state. Soil of the best to be found anywhere. Quality citrus fruits produced up to the highest standard of excellence. Reason for selling, moving away. It is an opportunity worth while to some one. Address Box 114, Citra, Fla. 2t-pd

**10 ACRE ORANGE,** grapefruit grove, 6 years old, Lakeland Highlands, next to Haskell Townsite on Dixie Highway, near Haskell station and packing house Owner, H. J. Strimple, Penns Grove, N. J.

**THE GROVE YOU WANT**—You'll find it fully described and correctly priced in our new booklet "Groves and Farms" just issued. Send for copy. Dotson & Company 816½ Franklin St., Tampa, Florida.

**WILL EXCHANGE** West Texas cattle ranch for unimproved or improved land in Florida. What have you? Give price and full particulars. T. E. Bartlett, 3410 McKinley Ave., El Paso, Texas.

## CALIFORNIA

**\$5,000 CASH—\$5,000**

Balance 1-2 NET profits from crops. 20 Acres full bearing Navels. \$10,000 eight room house.

Chance to acquire beautiful home and profitable business with small outlay.

Buyer must know citrus culture and reside on property.

Other business interests cause this exceptional opportunity.

CLARENCE GELDERT, Owner. 1765-G North Bronson Avenue, Los Angeles, California.

**EARLY BEARING** Papershell Pecan trees, budded or grafted and guaranteed. Great shortage this year. Write for catalog today. Bass Pecan Company, Lumberton, Miss.

**WANT to hear from owner** having farm for sale; give particulars and lowest price. John J. Black, 180th Street, Chippewa Falls, Wisconsin. Dec. 31

## NURSERY STOCK

**FRUIT TREES**—Large stock of all kinds of fruit and ornamental trees, roses, shrubs, vines, etc. Order direct from growers. Most complete line offered in Southwest. Free catalogue. Express paid. Consolidated Nursery. Houston, Texas. tf

**PAPER SHELL PECAN GROVE.** Most trees 12 and 13 years old, which is full bearing age. Good condition. Forty

acres. Located near Monticello, Fla. Price \$500.00 per acre. Simpson Orchard Co., Vincennes, Ind.

**FOR SALE**—700 Valencia, Pineapple Marsh 4-year buds. Probably best in state. 1000 nursery stock. Sealed bids, Dec. 20. For information apply U. S. Dept. Agriculture, Box 1053, Orlando, Fla.

**FOR SALE**—Peas and velvet beans of all kinds. New bags, even weights. All peas re-cleaned. H. M. Franklin, Tennille, Ga. Mar.-4t

## MISCELLANEOUS

**WHITE WYANDOTT** Cockrels, regal strain—the best in the country, direct from Martin pens. Utility and show birds \$5.00 each; also eggs for hatching \$5.00 per 15. W. A. King, Gen. Del., St. Petersburg, Florida.

**FOR SALE**—Dairy and stable manure, car lots. Link & Bagley, Box 2461, Tampa, Florida.

**S. S. COACHMAN,** Clearwater, Florida, wishes to buy Tangerine and pineapple orange trees on Grapefruit stock.

**SOUTHDOWN SHEEP.** White Rocks, Toulouse Geese, Guineas, Angora and Milk Goats, Circular free. Woodburn, Clifton, Va.

**FLORIDA INVITES YOU**—Write today for our new grove list in Supplement No. 4 to our regular booklet. It's full of bargain offerings and more than likely contains full description of the very grove you'd like to own. Dotson & Company, 816½ Franklin St., Tampa, Florida.

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National DETECTIVE Agency

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The Largest and Best in the South

# Play Safe

**SKINNER COKE HEATERS** have positively proven their effectiveness, in protecting Florida groves from damage by frost. Because of their efficiency, low first cost and economy of operation, they offer the very best means available for insuring citrus trees, fruit and truck crops against frost damage. SKINNER COKE HEATERS send out an intense radiant heat that frost can not penetrate, thereby protecting buds, blossoms and the tenderest growth. Write at once for full particulars.

**Skinner Machinery Company**  
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World's Largest Manufacturers  
of Fruit and Vegetable Packing  
Equipment.

